WEEDS TREES & TURF

MAY 1976

Adult Spittlebug

Turf Pest Control

PRO4 Diamond Shamrock

DACAMINE® gets to the root of broadleaf weed problems.

Dacamine turf herbicide kills weeds all the way down to the roots . . . not just the tops. The secret: Dacamine works more slowly than common 2,4-D, allowing time for more chemical to be absorbed into the weed and translocated to the roots.

Dacamine controls knotweed and 75 other broadleaf weeds. It is non-volatile, even in hot weather . . . provides an extra margin of safety for nearby ornamentals. Just avoid spray drift and follow label directions.

Powerful, non-volatile Dacamine. It's the broadleaf weed killer in the Diamond Shamrock Pro-4 Turf Care pesticide system that includes DACONIL 2787® fungicide, DACTHAL® preemergence herbicide, DACAMINE® and DACONATE® herbicides. See your turf chemicals supplier. Or contact the nearest Diamond Shamrock office listed below.

Diamond Shamrock
AGRICULTURAL CHEMICALS DIVISION

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Circle 105 on free information card

Hardwoods . . . softwoods . . . conifers perennial broadleaf weeds . . . vines . . .

A Banvel® herbicide can control all this tough vegetation for 3 to 5 years . . . where phenoxies fail.

Your vegetation control program demands a versatile chemical that controls the broadest, most varied mixture of brush and weeds.

There are no other herbicides in commercial use that outperform Banvel (dicamba) formulations. You can get Banvel 4-W.S. (water soluble) or Banvel 4-O.S. (oil soluble) herbicide which contain four pounds dicamba (a.e.) per gallon. These formulations may be tank-mixed with either 2,4-D or 2,4,5-T, or with both.

Or the pre-mixed Banvel herbicide combinations may fit right into your prescription for control of unwanted vegetation . . . from ash, oak and cedar to puncturevine and willow.

Premix or tank mix, you can get the results you require, often at less cost than using a phenoxy herbicide alone, or other systemic herbicides.

Why Banvel® (dicamba) works so well

As a systemic herbicide, Banvel (dicamba) is more active against many weeds than phenoxies. Banvel (dicamba) enters the plant through leaves, bark or stems, and through roots. It destroys growth tissue as it translocates through the plant system.

Banvel's different mode of action and mobility in the plant account for a higher degree of control with Banvel herbicide alone, or with Banvel (dicamba) plus phenoxy mixtures, than with phenoxies used alone.

Thus, Banvel (dicamba) is more active against many brush species than phenoxies. Banvel 4-W.S. not only controls brush controlled by 2,4-D and 2,4,5-T, but also controls many species not controlled by phenoxies, such as evergreens and suckering hardwoods.

Before tough brush gets tougher...

To control ash, oak, hickory, poplar, sassafras, cedar... as a basal application use Banvel-510 (oil soluble) herbicide, containing one pound dicamba and two pounds 2,4,5-T per gallon. Or as a foliage application use Banvel-320 (water soluble) herbicide, containing one pound dicamba, one pound 2,4-D, one pound 2,4,5-T per gallon. Or Banvel-710 (water soluble) herbicide, one pound dicamba plus two pounds 2,4,5-T per gallon. These formulations control most of the species that phenoxies alone do not control.

Apply Banvel herbicides on 3-5 year cycle

Even though the entire plant is not sprayed, Banvel herbicides can give a higher percentage kill. Other herbicides may only suppress. Banvel formulations are more effective on the toughest trees, vines or weeds that have deep, extensive root systems. Even a little Banvel (dicamba) absorbed somewhere in the plant eventually gets to the roots.

Translocation takes time. Banvel-510 kills brush species the same year it is applied. On some species, such as oak, complete kill is not obtained until the second growing season after application.

Chemicals that give immediate first year brownout do not necessarily give third year kill. For some species, it takes 18 to 24 months from time of application to achieve kill.

This means that your spray program goes on a three to five year cycle. You seldom have to go in again on the same area with brush killer sooner than three years.

Banvel (dicamba) nips root-sprouting in the bud

Translocation explains why Banvel (dicamba) is so effective in getting rid of root-sprouting brush... poplar, sumac, chokecherry, locust, sassafras, aspen, persimmon.

Banvel (dicamba) plus a phenoxy kills dormant buds. Banvel-510, containing 2,4,5-T, for basal application, is recommended, unless use of T is restricted. Then although it does not control quite as broad a spectrum, use Banvel-520 herbicide (which contains 2,4-D and costs less).

Spot treat with Banvel XP herbicide pellets

To supplement your spray program, a follow-up spot treatment with Banvel XP herbicide pellets (ten percent dicamba in clay) gives you convenience, economy and excellent brush kill.

Banvel XP pellets control sparse, scattered vegetation that is difficult to reach with mobile equipment. It's easier for one man to carry 100 pounds of Banvel XP pellets on an acre than to do the equivalent with liquid chemical weighing 2,500 pounds.

A major advantage of pellets... no waste. Apply high or low label rates as needed to get control, precisely where it's needed.

Banvel XP herbicide pellets are dust-free. There's no chance of airborne herbicide drifting to crops or ornamentals.

After Banvel herbicide application, grasses flourish

Banvel (dicamba) is a selective herbicide, allowing grasses to remain as soil cover, to prevent erosion and to permit, as directed by label, livestock to graze.

Environmentally speaking, Banvel (dicamba) that is not absorbed by plants breaks down quickly in the soil in the process of biodegradation.

To get moving in the right direction ...toward an effective, efficient brush control program... get in touch with your applicator about Banvel herbicide formulations.

For immediate information about how Banvel herbicide fits into your vegetation control program, dial toll-free on the Banvel Herbicide Hot Line.

Note: Before using any pesticide, read the label.

To help you on specific brush control problems, Velsicol maintains a toll-free telephone that you may use all year 'round.

BANVEL® HERBICIDE "HOT LINE"

DIAL (toll-free):
800/621-4129
Illinois callers: 800/972-8381

between 9 a.m. and 4 p.m. Monday through Friday. Calls made outside of these hours will be automatically recorded and answered within 48 hours by phone or mail.

Just cut out or tape on or near your phone for handy reference.

BANVEL® Herbicide from VELSICOL

VELSICOL CHEMICAL CORPORATION
341 East Ohio Street, Chicago, Illinois 60611

Velsicol is a subsidiary of Northwest Industries, Inc.

WEEDS TREES & TURF®

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16 New Greens Trench Drain Method — The city of Walnut Creek, Calif. had a severe drainage problem with the greens on its municipal golf course, and solved it with a new technique.

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The Cover — The spittlebug is in the group of turf insect pests that suck the life from the grass. The pest produces a frothy spittle as it feeds on the plant sap. Infestation of turf by spittlebugs is easily recognized by these frothy masses.

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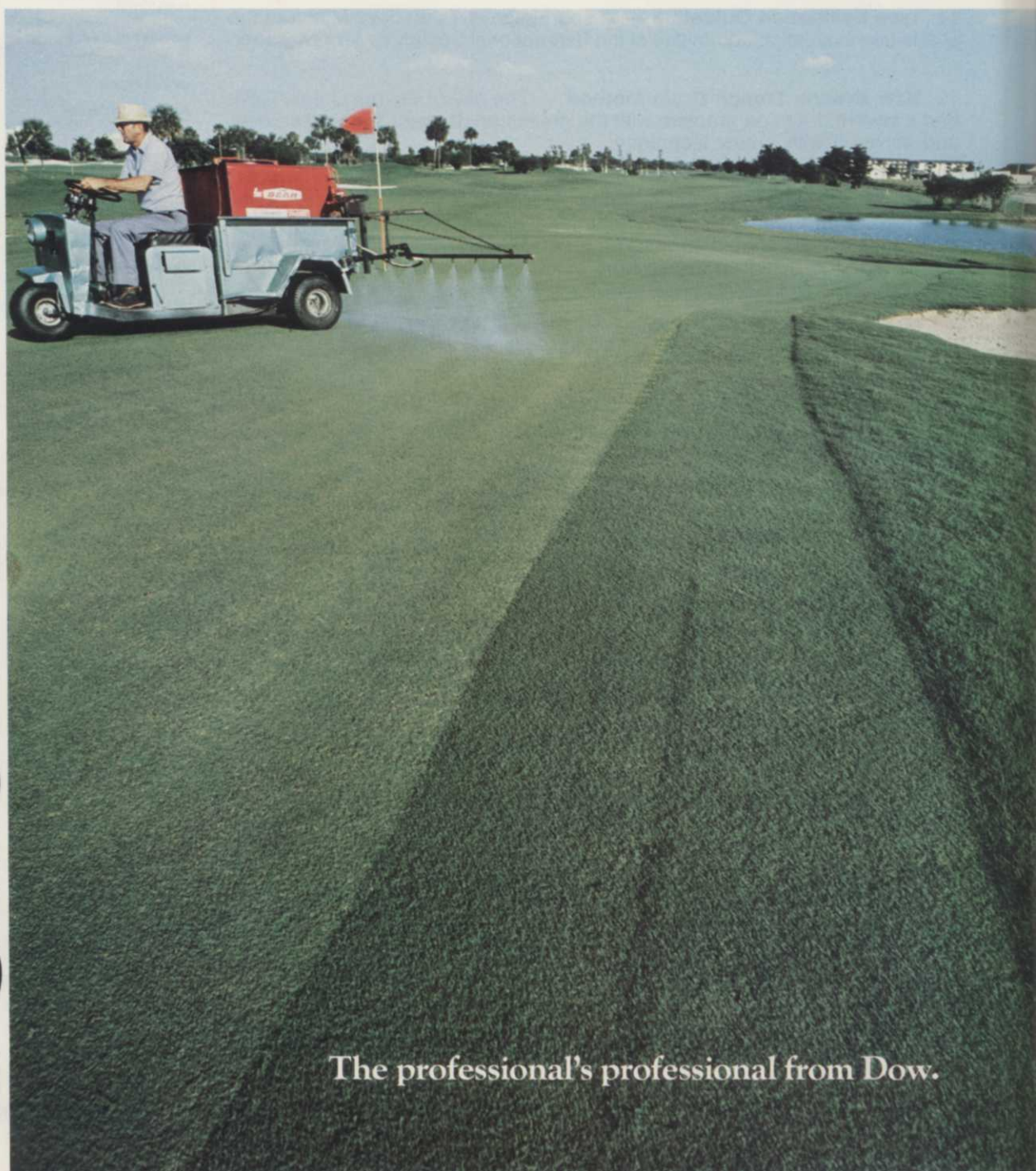

The professional's professional from Dow.

Government News

Anti-spill regulations of the Environmental Protection Agency will name 300 major chemicals, many of which are pesticides and herbicides used in the green industry. Under the soon-to-be-published regulations, penalties for spills or discharges of the chemicals "in harmful quantities" (in some cases a pound or less) would subject companies to heavy civil fines.

The federal Japanese beetle program will terminate in October if not reinstated; funding for the program was not included in the latest federal budget. Basically, this reasoning seems sound to some because this pest has about reached its geographical range. However, others feel the program was discontinued because of the banning of control materials by the Environmental Protection Agency, and that within two to three years there will be losses due to Japanese beetle grubs and other subterranean insects which have not been a problem since the 1950s. These persons feel that when these problems become extreme once again, that pressures will force federally financed studies aimed at control.

Most economists believe the economic recovery is real and are scaling their projections upward. And experts predict this favorable forecast: The median price of a new home is 20 percent cheaper than it was in 1970 when related to disposable income. This, plus declining mortgage rates, will result in 1.6 million new homes this year and two million next year -- good news for landscapers, sod growers and other related green industry persons.

Another salvo in the chlordane and heptachlor fight -- this time from Velsicol Chemical Corp., Chicago. In a recent letter to Environmental Protection Agency administrator Russell E. Train, Velsicol charges that a recent EPA request for recall of all stocks of chlordane and heptachlor is illegal. The letter says in part: "As you are aware, there is no authority in the law for recall of products which have been suspended...these suspension orders contain absolutely no provision for recall of these products. As you are also aware, although certain registrations have been suspended, none has been cancelled and the cancellation proceedings for heptachlor and chlordane still are pending and unresolved." Velsicol claims that although the EPA letter is phrased as a "request" since it comes by certified mail from the government, there is obvious official pressure, and registrants will be misled into believing they have to comply.

Insurance companies are seeking to become partners with the federal government in a booming line of insurance. That line is insuring the nation's farm crops against all risks, including so-called "acts of God," such as flood, frost or drought. At present, most of this insurance is written by the United States Department of Agriculture's Federal Crop Insurance Corp. Last year the government's premium volume grew to $73.6 million, up 36 percent from 1974 and double the volume of a decade ago. Is there room here for insurance for green industry crops?

The postponement for a year the requirement for certification of pesticide applicators has not resulted in any noticeable delay in states' training and certification efforts, the Environmental Protection Agency reports. 25 of the 54 states and territories that need approved state plans for applicator certification now have EPA-approved plans or ones the agency considers approvable.

David C. Harmon (right), superintendent at the Golden Horseshoe golf course at Colonial Williamsburg, is the new president of the Virginia Turfgrass Council, succeeding Jack Henry. Serving with Harmon are (from left) Rex H. Harris, superintendent of the Eagle Haven golf course near Norfolk, assistant secretary-treasurer; Earle H. O'Dell, assistant manager of the turf and garden division of Todd Co., Chesapeake, secretary-treasurer; and Samuel L. Kessel, superintendent of the Country Club of Fairfax, vice president.

Superintendents Form Industry Council

The executive committee of the Golf Course Superintendents Association of America has formed an Industrial Advisory Council to discuss problems and ideas in the industry. It will consist of representatives of the turf industry and certain members of the GCSAA executive committee.

Members of the Council are Conrad Scheetz, GCSAA executive director; Lou Haines, director, Denver Country Club; Richard Malpass, president, Riverside Golf and Country Club, Portland, Ore.; Ted Woehrle, vice president, Oakland Hills Country Club, Birmingham, Mich.; Gordon Witteveen, director, Board of Trade Country Club, Woodbridge, Ontario; John Kinkead, National Mower Co., St. Paul, Minn.; Tom Haschen, Du Pont Co., Wilmington, Del.; George Horn, O. M. Scott & Sons, Marysville, Ohio; James Latham, Milorganite, Oak Creek, Wis.; Robert Moore, Aquatrols Corp. of America, Pennsauken, N.J.; Theodore Smith, Jr., Smithco, Inc., Wayne, Pa.; Roger Thomas, Jacobsen Manufacturing Co., Racine, Wis.; James R. Watson, Toro Co., Minneapolis, Minn.; and Vernon Worrel, Cushman Ryan, Lincoln, Neb.

The industry members were chosen for three-year terms. A GCSAA spokesman said the idea behind the selection of Council members was to cross product lines and sizes of companies, and to also get high-level persons in each company that could speak with authority on industry matters.

The Council met March 31 and April at GCSAA headquarters in Lawrence, Kan. and discussed a number of topics, including: the annual conference, industrial relations committee, membership, legislative matters, education, scholarship and research, identification of problems between industry and turf professionals and public relations. The Council will meet again in the fall.

Golf Course Builders Directory Now Available

The 1976 annual directory of America's builders and construction equipment suppliers is available free from the headquarters of the Golf Course Builders of America, 725 15th St., N.W., Washington, D.C. 20005.

The 44-page directory features photos, biographies and golf course construction references of GCBA members from New York to California. The booklet also contains a membership application for firms that wish to join the association as a builder member or as an associate or supplier member.

OSHA Fines to Golf Courses Handed Out by Inspectors

Government inspectors from OSHA have visited golf courses in Baltimore and Washington and have handed out fines, according to reports in the newsletter of the Pennsylvania Turfgrass Council. Most frequently violated standards are:

(1) Failure to ground lines and equipment; overloading lines, frayed wires; improper insulation; unprotected switch and fuse boxes.

(2) Unguarded belts, fly wheels, drive chains and gears.

(3) Outdated fire extinguisher inspections, improper mounting and inaccessible locations.

(4) Inadequate point-of-operation guards for all machines.

(5) Unguarded saw blades on woodworking machinery.

(6) Unprotected drops of four or more feet within floors, wall openings or holes.

(7) Unclean and wet working areas: projecting nails and splinters.

(8) Improper storage of compressed gases.

(9) Improperly adjusted grinder tool rests and missing guards.

(10) Unmarked exits, sometimes locked or improperly lighted.

(11) Improper storage of flammable and combustible liquids.

(12) Sanitation.

Authority on Developing City Shade Trees Dies

Edward H. Scanlon, founder of the Society of Municipal Arborists and an internationally recognized authority on developing shade trees for city use, died recently in Cleveland. He had been commissioner of shade trees for that city. He was also a founder of the International Plant Propagators Society.

He supervised the planting of more than 85,000 trees in his eight years at the Cleveland post and later as commissio-er for the Cleveland Electric Illuminating Co. He developed many types of ornamental trees on his 70-acre farm near Cleveland.

He developed a controversial program to replace towering elm trees. "We should plant a tree that fits the space," he once said. The elms were dangerous in storms, often falling on houses and people, and they ruined grass, cracked sidewalks and obscured street lights, making streets dark and dangerous.

Nursery Management Seminar Is July 25-30 in Colorado

The American Association of Nurserymen's 21st Management Seminar will be held July 25-30 at Colorado State University, Fort Collins, Colo.

The seminar is a solid week of professional development to sharpen management skills, equipping staff people in any nursery business organization to operate more productively and more professionally, an Association spokesman said. It is built around specific lecture sessions — applicable to management and key employes in every wholesale, retail and landscape operation of any size — and these are supplemented by smaller group discussions.

Seminar leader is Dr. Eric W. Lawson, chairman of the Finance Department in the Syracuse School of Management. He is well-known to many in the nursery industry, widely experienced in matters of the nursery business and highly respected as an outstanding consulting authority. For further information, contact the Association at 230 Southern Building, Washington, D.C. 20005.

Sod Survey—Marketing Change Needed

A recent survey of the Maryland sod industry indicates there is a vital need for a change in marketing patterns, according to University of Maryland turf specialist Prof. John R. Hall.

"The days of sod demand exceeding supply are over for a while and new marketing techniques are needed," Prof. Hall said. "The sod industry rode the high wave of sod demand that housing construction created in 1972 and 1973 and did not broaden its marketing potential during this period."

He said perhaps innovative advertising and marketing concepts are in order to attract new consumers. The "roll your own sod" concept that is gaining momentum can serve to open the gates to the totally untapped homeowner need for sod. He said sod has so many advantages over seeding for the homeowners that it is a small wonder this market has not been extensively explored. Homeowners spend close to $50 million per year maintaining lawns in Maryland. A great deal of this money could be spent on improving existing lawns with sod if sod were more available to the average homeowner. He said there are many other areas where the advantages of sodding should be made known.

"The time for diversification and development of new marketing and advertising techniques has arrived," he said. "The sod industry can no longer sit idly by and wait for demand to knock on its door."

The report showed the number of sod growers decreased from over 80 in 1973 to 67 in 1975. Sod acreage in the state has decreased from 13,-150 acres in 1973 to 10,778 acres in 1975. The average cost of an acre of sod at the point of first sale excluding installation charges increased from $1,366 per acre in 1974 to $1,419 per acre in 1975. These are gross averages and include variable services provided at each farm; 3,-162 acres of sod were sold in Maryland in 1974 and only 2,367 acres in 1975.

Total value of sod sales in Maryland on a cash first sale basis has decreased over 22 percent from over $4.32 million in 1974 to over $3.35 million in 1975. The value of sod sold on a cash first sale basis was greatest in 1972 and has decreased rapidly with the general decline in housing construction.

The survey response for Maryland indicates over 65 percent of the acreage in sod production was treated with a herbicide in 1975 while insecticide and fungicide treated acreage was over 28 percent and over six percent respectively.

New officers of the National Arborist Association are: (seated, from left) Kenneth Kirk, second vice president; Gerald Farrens, first vice president; Boyd Haney, president, and Larry Holkenborg, secretary. (Standing, from left) Tom Morrison, past president; directors, Earl Sinnamon, Walter Money, George Tyler, Erik Haupt; Bruce Walgren, treasurer.

Arboriculture Convention August 8-12 in St. Louis

The 52nd annual convention of the International Society of Arboriculture, formerly the International Shade Tree Conference, will be August 8-12 in St. Louis, Mo. The headquarters hotel will be Stouffer's Riverfront Towers and all educational sessions will be held there.

This year's program emphasizes the Bicentennial with discussion sessions and contributed paper sessions. One highlight will be an all-delegate day at the Missouri Botannical Gardens. This affair will consist of outdoor equipment demonstrations by manufacturers, a luncheon with entertainment, and a special attraction — the Arborist's Tree Climbing Jamboree — where the world champion tree climber will be chosen.

Society president Jack R. Rogers of Pasadena, Calif. has chosen the theme "Trees Form an Archway to the Future" for the meeting. Over 50 commercial companies will exhibit and demonstrate their products and equipment and an anticipated 1,500 shade tree persons will attend.

Officers of the American Society of Consulting Arborists are: (front row, from left) O. J. Andersen, Houston, immediate past president; F. Earle Martin, Toronto, president; William P. Lanphear, Cleveland, president-elect; F. Lewis Dinsmore, St. Louis, vice president; Spencer H. Davis Jr., Milltown, N.J., executive director. Also, (back row, from left) Walter J. Barrows, Ventura, Calif.; Arnold H. Webster, Waterloo, Iowa; Nat P. Dunn, Memphis, Tenn.; and William J. Griffin, Santa Barbara, Calif., directors.

Alternatives to Pesticides in Ag Research Proposal

Alternatives to chemical pesticides, photosynthesis, nitrogen fixation and alternative technologies that reduce consumption of energy are part of a proposal that $110 million be given to areas crucial to agricultural productivity. The proposal was made recently by the National Academy of Sciences.

The Academy proposed a major reorganization of the agricultural research system in the United States. It recommended the U.S. Dept. of Agriculture appoint a high level administrator to devote his major interest to agricultural research. Further recommendations call for state and federal support of agricultural research to be increased by 40 percent, from $450 million to $630 million.

The Academy also urged a program of competitive grants be initiated and administered by the Dept. of Agriculture to encourage research in the mentioned areas. Of special importance for immediate research is a proposal to focus on ways of decreasing dependence on chemically synthesized fertilizer.

Pennsylvania Nursery Show Scheduled for July 27-29

The Penn Allied Nursery Trade Show is scheduled for July 27-29 at the Hershey Motor Lodge Convention Center, Hershey, Pa.

Exhibit space for the show has been expanded to 222 booths for plant material, equipment and supplies. Last year, 2,400 persons from 31 states attended. For information, write: S. Howard Davis, Penn Allied Nursery Trade Show, 169 W. High St., Carlisle, Pa. 17013.

New Florida Sales Agency Named by Melnor Turf

Peter C. Zaphiris, executive vice president of Melnor Industries Turf Irrigation Division, Moonachie, N.J., has appointed W & B Associates, 1180 North Rome Avenue, Tampa, as its sales agency for Florida.

Under the direction of Robert Pressner, W & B Associates will be responsible for the sales of Melnor's line of agricultural and irrigation equipment to pump and sprinkler specialty supply houses in Florida.

Landscape Contractors Form Wisconsin Chapter

The Wisconsin Landscape Contractors Association has formed a new chapter to be known as the Southeast Wisconsin Chapter of the Association. The organization has 16 charter firms from Racine, Kenosha and Walworth counties.

Elected to serve as officers are: Leo Schuch, Town & Country Pines, Kenosha, president; Ray Hintz, Ray Hintz, Inc., Caledonia, vice president; and Arnold Sieg, The Bruce Co., Kenosha, secretary-treasurer. Other charter members include:

Roger Condrad, John Condrad Sr. & Sons Landscaping, Burlington; Scott Davis, Davis Sod & Landscaping Service, Racine; Warren Guentzel, G & S Landscaping, Racine; Dick Swartz, The Swartz Nurseries, Kenosha; Randy Larsen, Lawn Specialist, Inc., Racine; Gerald Kramer, Kramer's Construction Co., Inc., Kenosha; Douglas Karge, McKay Nursery Co., Racine; Phillip J. Cruz, Jr., Racine; George Kauffman, Parkside Lawn Service, Kenosha; T. R. Garcia, Tarr Lawn Service; Kenosha; Henry Halter, Halter Farms, Inc., Union Grove; Bill Burmeister, Burmeister Sod, Waterford; and Don Passehl, Wisconsin Turf Equipment Corp., Racine.

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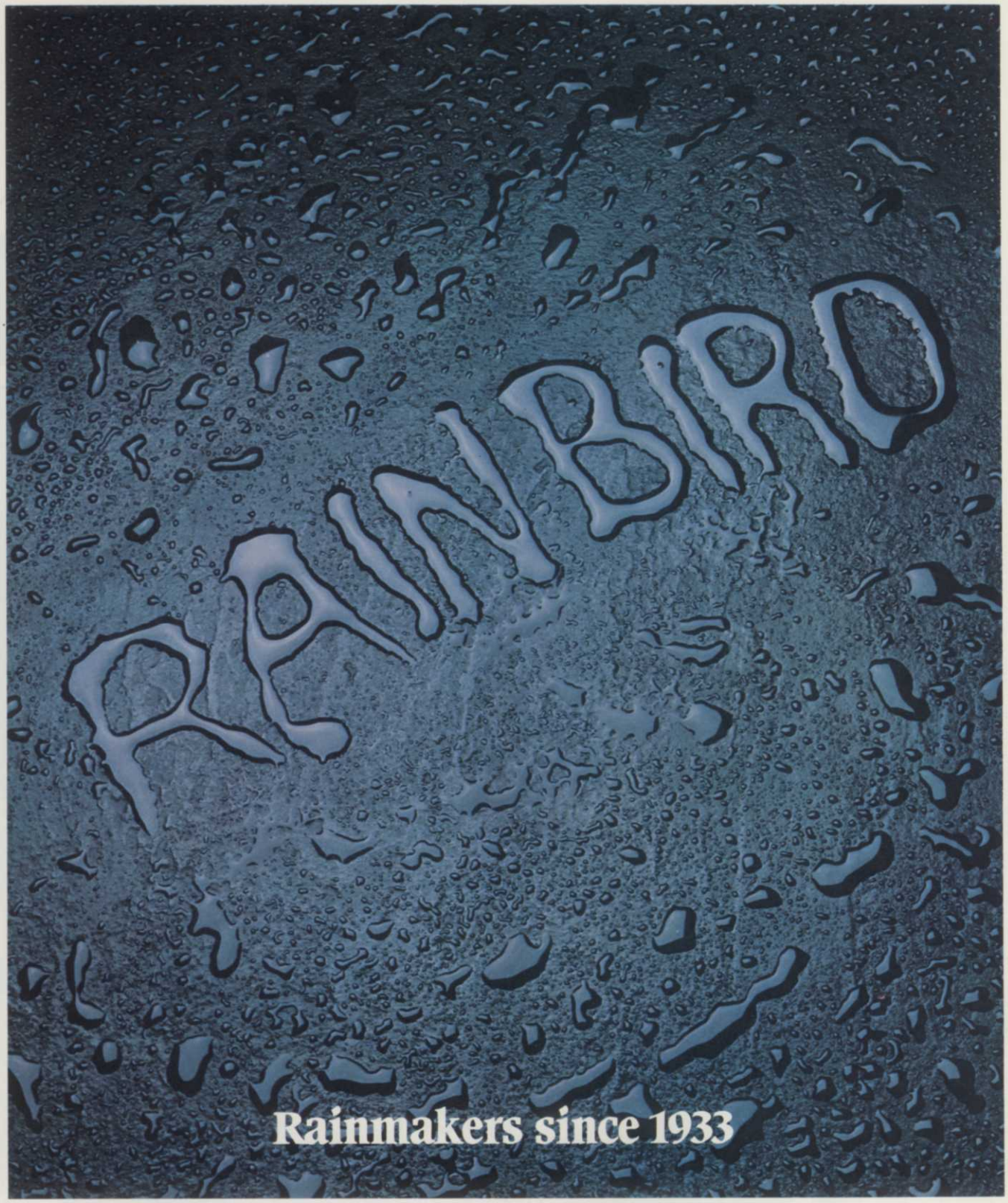

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For ad on following page Circle 102 on free information card

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In the spring, start your four-season spray program early before leafspot, dollarspot, or melting-out get started. Use Acti-dione TGF® or Acti-dione RZ®, alone or in combination. Both products are easy to use, economical, and attack fungi without killing bacteria that are helpful to grass.

As the weather turns warmer in the late spring, continue spraying tees, greens and fairways with Acti-dione TGF. Where brown patch is a problem, use Acti-dione® Thiram. Both products control the major hot weather diseases like dollarspot, melting-out, fading-out, leafspot, rust and powdery mildew.

You know how your tees, greens, and fairways look is a reflection of the care you give them. So give them the very best. Use Acti-dione turf fungicides. They're the standard.

TUCO

Division of The Upjohn Company

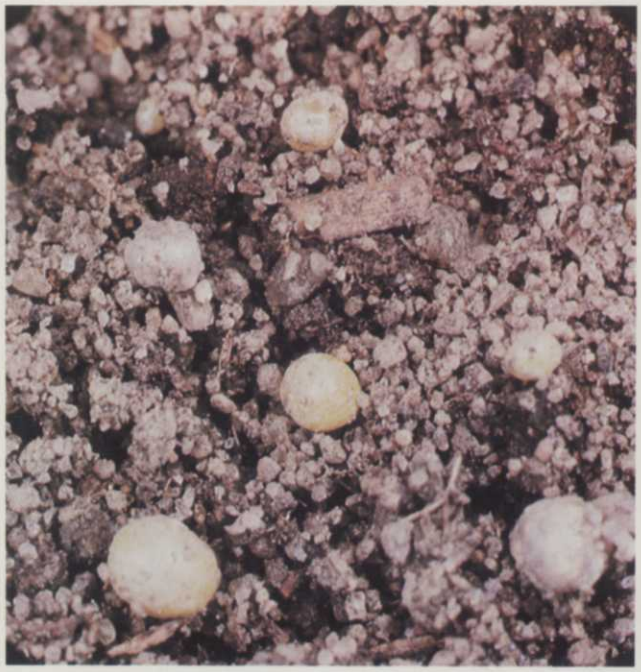
Chinch bugs

Mole cricket

White grub

Green June beetle

True armyworm



Ground pearls

Six Turf Pests

The turf manager must be able to recognize an insect problem, be familiar with the stages of an insect's life cycle during which damage may occur and know when to apply treatment for most effective control.

Grubworms are the larvae of hard-shelled beetles. They are white to off-white in color and have brown heads. When turf is rolled back, disturbed grubs may be found lying in a C-shaped position in the soil around the root area of the grass. Common grubs that cause much damage are Japanese beetles, Northern masked chafer and the June beetle. Damage in turf by grubs appears as brown patches of dead grass which can be rolled back like a carpet. Generally, damage is noticeable from May on.

Ground mole activity in turf is a good indication grubs are present, since moles feed on grubs. The best way to tell if you have grubs is to examine the soil from May to September. To do this, cut a foot-square flap on the three sides and roll the grass back so soil at the root area can be observed. Do this in several places in the turf. A treatment is needed when you find an average of two or more grubs per square foot, according to Richard L. Miller entomologist at Ohio State University.

The adults of different species of June beetles which vary from light brown to nearly black, emerge from the soil during May and June. Adults feed at night on the foliage of such trees as oak, hickory, walnut, birch, elm, willow and many others. During the day they hide in the soil, usually a grass area, where the females lay their eggs. Eggs of these beetles, when first laid, are pearly white and elongated. They become swollen and almost spherical six to seven days later. Then they hatch into tiny grubs in about three to four weeks.

The young grubs feed on decaying and living vegetable matter in the soil during the first summer. As cold weather approaches, they burrow deeper into the soil, remaining there until the spring of the following year when they return near the surface to continue their feeding on the roots of the plants.

Grubs feed vigorously and grow rapidly throughout the second summer, Miller said, causing most of the damage to turf during this year. About mid- October, they burrow into the soil to spend the second winter. In the following spring they move to the surface once more and feed for a month or two on the roots of grasses and other plants. About the middle of June they move downward in the soil and change to the pupal stage. After spending a month as pupae, they change to adults but remain in their pupal chamber throughout fall and winter and emerge as adults the following May and June.

Female beetles begin to lay eggs in the soil shortly after emerging, thus starting another cycle. Apply recommended insecticides, such as diazinon, dursban, dylox or proxol in late March or early April, or in the fall before the ground freezes. Water the turf after treatment. One treatment properly applied will last five years or more, Miller said.

Chinch bugs are more likely to be serious in bentgrass turf, however, bluegrass is also attacked. Damage to turf by chinch bugs is caused by the young bugs or nymphs. These bugs, when full-grown, are about ¼-inch long and black with a white spot on their back between their wings. They suck juices from the grass, causing it to turn brown and eventually die. Chinch bug infested turf may have many large, irregular dead patches. Look for the bugs in the circle of grass which has turned yellow around these dead patches.

Two generations of chinch bugs appear annually, in the Midwest at least, with nymphs being present in the lawn the last half of June, first generation, and again the last half of August, second generation. Two treatments are probably needed to keep the damage to a minimum in turf where the insect is a problem. Apply the first treatment in early June and the second in early August. Since the bugs are usually concealed in the thatch, it is best to water the lawn before applying treatment. Use any one of a number of insecticides, including sevin, diazinon, spectracide, ethion, aspon, dursban or trithion.

Mole crickets are light brown in color and are adapted for digging. The stout and shovel-like forelegs allow them to dig rapidly, says Howard B. Sprague in his *Turf Management Handbook*. Besides feeding on roots, they also burrow the soil uprooting seedlings and the soils dries out faster. A single cricket can damage several yards of a newly seeded lawn in a night. It is a pest primarily in the Southeast. Eggs are laid three to eight inches deep in the soil where they hatch to form nymphs that burrow and feed in the soil. Adults live for several months. If a locality has a record of mole cricket damage, it would be well to apply a preventive treatment rather than wait for damage to appear. Suggested insecticides for control include diazinon, baygon and dursban.

Ground pearls are a pest of centipedegrass and bermudagrass. They feed on grass roots to which they are attached by their needle-like mouth parts, according to John H. Madison in his *Practical Turf Management*. The young stages are small and relatively undifferentiated. The insect secretes a white, waxy sac about its body giving it the appearance of a small pearl. The pest causes irregular dead patches in the turf and is difficult to control.

Armyworms are named because of their habits. They move across the turf in large numbers and eat everything. The two common armyworms are fall and true armyworms, both of which can do serious harm to turf. Infestations noted early may appear as a small, webbed area in the turf. As they develop, the turf may be eaten to the soil. Suggested insecticides include sevin, proxol, dylox, diazinon or spectracide. □

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Tree Evaluation Guidelines Get Green Industry Push

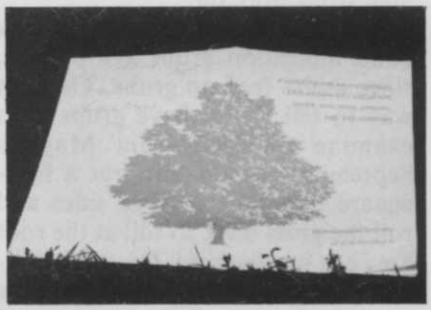
A public relations program being underwritten by the International Society of Arboriculture, National Arborist Association, American Association of Nurserymen and the American Society of Consulting Arborists is intended to bring to the attention of homeowners and others the value of trees. One of the persons charged with this campaign is Frederick R. Micha, Monroe Tree & Landscape, Inc., Rochester, N.Y.

"One of the purposes of our committee is to work with insurance companies to see if they can upgrade some of their principles they have written into insurance laws and regulations," he told WEEDS TREES & TURF. "Primarily the biggest thing is the loss of an individual tree or plant, compensation for it. $250 now stands for the basic homeowner's policy. But we have gotten it raised to $500 in six states as a trial balloon, and it may go even further.

"The next big battle that we started is with the Internal Revenue Service," he said. "As it stands now, our shade tree evaluation techniques and our formula for appraising trees is not acceptable under IRS rules. They call it a hypothetical formula, and we feel that is unfair. That is another hurdle that we are going to have to try to change."

"We have already finished our third phase of this program," he said. "That was redoing the appraisal techniques of shade tree values. We took the guts out of our old guidelines and completely revised it. "We made it stronger because the man that now has the booklet has to be horticulturally trained as a plantsman to use it."

Dr. L. C. Chadwick (left), director Emeritus of the International Society of Arboriculture, with Frederick R. Micha, Rochester, N.Y., and Ray Gustin Jr., Silver Spring, Md. These three were part of the committee to update evaluation guidelines and to spearhead a publicity campaign across the country about tree evaluation by experts.



This Guide to the Professional Evaluation of Landscape Trees, Specimen Shrubs and Evergreens *has been revised and is a tool used by qualified arborists and nurserymen to place a monetary value on trees.*

The committee consisted of Dr. L. C. Chadwick, director Emeritus of the International Society of Arboriculture; Dr. Spencer H. Davis Jr., New Brunswick, N.J.; Ray Gustin Jr., Silver Spring, Md.; and Micha. They worked with Valleau C. Curtis, Callicoon, N.Y., of the American Association of Nurserymen. For further information, contact Micha at Monroe Tree & Landscape, Inc., 225 Ballantyne Road, Rochester, N.Y., (716) 432-2900. □

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New Trench Drainage Method Solves California Greens Problem

by David G. Finigan
Public Service Director
Walnut Creek, Calif.

The city of Walnut Creek, Calif. has successfully applied a technique called the "trench drain method" to improve the drainage of its municipal golf course greens resulting in an estimated savings of $75,000.

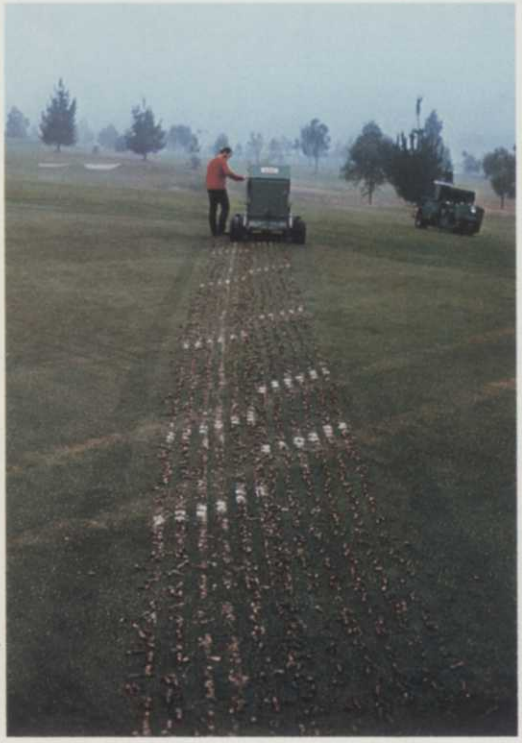
The city had been experiencing increasing difficulties with its greens for the past three years caused by water not percolating adequately through the green to the bottom drain lines. This resulted in "saturated" greens with unsatisfactory playing surfaces and promoted the invasion of *Poa annua* in the greens themselves. The greens' playing surface not only had "soft spots" because of the development of a thick layer of thatch, but "hard spots" caused by poor water drainage. Thus, a golf ball landing on the green might stay in the same place it hit or bounce a considerable distance.

In order to ascertain the nature and cause of the greens' drainage problem, the city made arrangements with the University of California cooperating extension service to conduct a series of greens tests. A representative of the Extension Service, with assistance from the golf course maintenance staff made the following four tests of the greens: water infiltration test, soil profile test, examination drainage outflow test, and precipitation rate test.

The results of the greens tests indicated that the golf course had a severe drainage problem in most of its greens. The infiltration test indicated that the average water percolation rate was .39 inches per hour without turf in place, compared to a standard average of one to one and one-half inches per hour. The greens profile tests indicated the presence of saturated layers of soil in the soil mix, again indicating inadequate drainage. The precipitation test proved that the greens were receiving adequate irrigation coverage.

Following the greens test, representatives of the city's public service department, extension service, and the golf course architect met to review the test results and discuss alternative improvement measures. It was concluded that the primary cause of the greens' drainage problem was the inability of the existing greens' soil mix to pass water successfully. Since the greens' soil mix was a combiantion of native soil, sand and organic matter, it was concluded that the fine clay soil particles in the native soil mix were building up at various levels in the soil strata, causing a barrier to water drainage.

The traditional method of correcting a severe greens' drainage



Ed Watson, golf course supervisor for the city of Walnut Creek, prepares one of the trench drains for a green (left), and after work has been completed (right).

problem such as this is to rebuild the green. Since it costs approximately $6,000 to rebuild a green, the total cost of this alternative was economically unfeasible.

Public service department staff, working with representatives of the extension service and golf course architect developed a new experimental method for improving the greens at considerably less cost. This method, termed the "trench drain method", involved the digging of four-inch trenches at two to five foot intervals (following the surface contour) throughout the green surface and filling these trenches with sand to create a series of "dry wells" or vertical drains allowing the irrigation water to percolate through the green to its base drain tile into the greens' drainage system. Small grooves, one-half inch in width and about two inches in depth, were also made in a diagonal pattern to the trenches to provide additional channels for surface irrigation water to move into the trenches and drain down to the drain tile. We estimated the cost of the method to be approximately $1,000 per green.

In October, 1974, golf course maintenance staff performed the method on the eighth green. By making only a few trenches each day, filling with sand and resodding immediately, the green was never taken out of play. A series of 13 trenches, five feet apart and 12 inches deep, were made throughout the green. A verticutter was used to make four-inch grooves one foot apart in a diagonal pattern to the trenches. This process took about three weeks.

This work was followed by the topdressing program of adding ⅛ inch of sand to the surface of the green twice a month. This was necessary to build up the surface of the green to smooth any unevenness caused by the trenches and grooves and facilitate surface drainage to the sand trenches. The green was topdressed twice a month for nine months, after which it is currently being done once a month. The cost of using the method on this green was $475 for materials (sand and equipment rental) and 160 workhours for the installation and filling of the trenches.

The eighth green was observed closely during the winter months to determine how well it drained the excess water caused by rain. The drainage of this green during this time was determined to be improved significantly well beyond our original expectations. Golf course maintenance staff also reported that during the spring and early summer, this green drained the irrigation water much better. The topdressing program developed for the greens has resulted in an improved playing surface.

Last May a representative of the cooperating extension service made a series of infiltration tests on the eighth green to measure the change in water percolation through the green. The results of those tests indicated that the overall drainage of the green has improved significantly. Not only is the drainage in those portions of the green above the trenches improved as expected, but most importantly, there was a lateral movement of water to the trenches through the grooves and sand layer developed through the topdressing program.

The city is now using the method on an annual basis to improve the remaining golf course greens. Three of the greens, however, had to be rebuilt because of extensive problems with their drains and soil mix. Since inadequate drainage of greens is a common problem for many golf courses, we believe that the method provides an economical technique for making drainage improvements to golf course greens. □

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Insect-Tree Relationships In an Urban Environment

by David G. Nielsen
Ohio Agricultural Research
and Development Center

Urbanization following the mechanical and industrial revolutions created an environment hostile for growing many plants, including trees and shrubs. As the United States urbanized population became affluent enough to permit visits to forested areas and to plant trees in neighborhoods, people developed an increased appreciation for trees.

Today, most people agree that healthy trees are desirable for aesthetic value, temperature-moderating effects, noise abatement and as organisms that simple help make life more pleasant. We would like woody plants to grow well in the artificial environment created by the urban community. Considerable efforts have been made to beautify our cities with trees but we have seldom considered how the urban environment stresses trees, making them more susceptible to attack and damage by pests.

Understanding insect-tree relationships in an urban community may lead to reasonable decisions about what kinds of trees should be used on urban sites and how existing trees can be managed to minimize losses from insect pests.

Foresters spend much research effort identifying site characteristics best-suited to individual tree species. Landscape horticulturalists have learned some trees do better on well-drained or acidic soils or with full or partial shade. However, those who plant trees in cities seldom consider certain tree species may not be well-suited to city living.

Trees have been planted in increasingly hostile locations, often drastically foreign to their genetic adaptations, without considering potential pest problems and associated tree maintenance. Little is known about how urban stress predisposes plants to insect attack. Understanding insect tree-host relationships in an urban community may lead to reasonable decisions about what kinds of trees should be used on urban sites and how existing trees can be managed to minimize losses from insect pests.

Stable host-parasite relationships are products of evolution. And through this process, a balance or state of equilibrium is reached where the parasite survives at some level low enough to enable both host and parasite to maintain a vigorous existence. A good example of this kind of relationship is the pine needle scale on conifers. This tiny scale insect is usually found in extremely low population density in the forest. However, in the nursery and in the landscape this insect often reaches pest status and can seriously reduce aesthetic quality of trees or even kill them. No one really knows why the parasite is benign in the forest and often destructive on landscape trees. Differences between the forest and man-made communities undoubtedly contribute to differences in how a scale population behaves on its host plant.

G. F. Edmunds Jr. of the Department of Environmental Biology at the University of Utah has said outbreaks of black pineleaf scale occur following unusually high mortality of natural enemies caused by "sorptive dusts" or insecticides used for control of other pests. He has also reported "scale populations apparently become adapted to specific host individuals and population density can become high only with genetic fitness of the scale population to the host species and individual." In his studies, scale nymphs had the best chance of survival on the parent tree, less chance on other trees of the same species and little chance when transferred to another host species.

This explains why one species or a single tree supports a heavy insect infestation while similar, nearby trees may be uninfested or support

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Insect-Tree Relationships from page 19

only a light infestation. Perhaps the plant which demonstrates or expresses genetic fitness with an insect pest should simply be replaced by a plant which is less susceptible or more tolerant of the endemic insect pest.

Landscape managers, nurserymen, scientists and others frequently ask why one plant species or cultivar is a particularly good host for a pest. Does man sometimes play a significant role in the evolution of this sort of relationship? Many of the most destructive insects have been imported from abroad. The reasons for their pest status generally include availabilities of an abundant food supply, suitable climate and absence of effective natural enemies. Gypsy moth, and black vine weevil are two examples of imported insects which create serious management problems on ornamental trees and shrubs.

Man has fostered another type of unstable host-parasite relationship by hybridizing and grafting woody plants. Lilac borer a native insect, was a pest of common lilac for years without creating serious problems for nurserymen or landscape managers. However, when French hybrid lilacs were mass-produced by grafting lilac buds on privet and ash rootstocks, lilac borer became a serious pest, often precluding economical culture of lilac. Grafted lilacs are either more suitable host plants in which borers survive and multiply better, or they are incapable of withstanding or tolerating "normal" borer population density.

This example points out man's endeavor to change characteristics of plants can create the same kinds of problems sometimes created when an insect is introduced into a foreign environment. In both cases, the host-parasite relationships that develop are often unstable, resulting in a serious pest problem. Similar problems sometimes occur when native forest trees are planted off-site in the nursery or in the landscape. White birch is a good example of what may happen when a native hardwood is planted in the urban environment. In the forest, bronze birch borer prefers overmature trees or those in poor vigor. Severe damage occurs only on mature, decadent or disturbed stands.

Apparently, white birch has a poor water transport system and is adapted to northern areas where cold temperatures and rainfall prevail during much of the year. On more southern, drier, exposed sites, including nearly the entire state of Ohio, white birch seems to do quite well until bronze birch borer attacks. It appears that trees are healthy but are physiologically vulnerable to this destructive pest. Water stress is thought to play a primary role in the relationship. In this case, we are considering a native insect on a native tree in a foreign environment (the urban or suburban landscape).

Gypsy moth and black vine weevil are two examples of imported insects which create serious management problems on ornamental trees and shrubs.

Many of the most destructive urban insects are those which can be considered beneficial in the forest.

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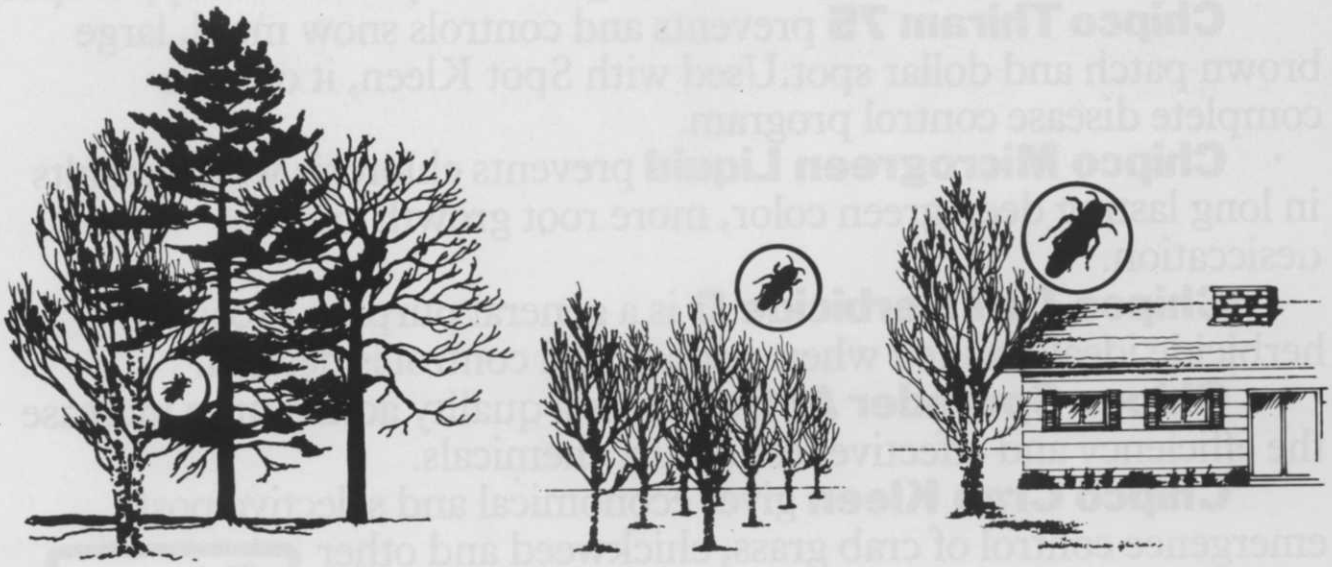

Relative importance of bronze birch borer as a pest of white birch growing in various locations: (left) birch in a red oak — white pine — birch forest, borer is of minor importance; (middle) birch in the nursery, borer is a significant production pest; and (right) birch in the landscape, borer is a major threat to survival.

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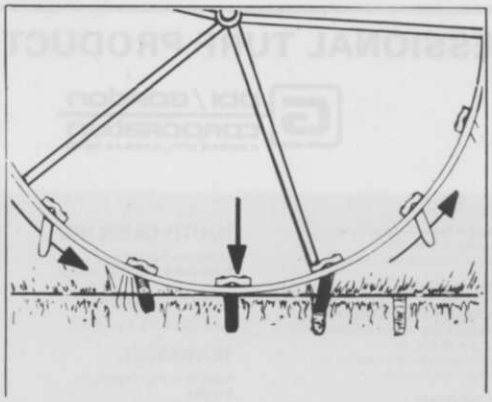

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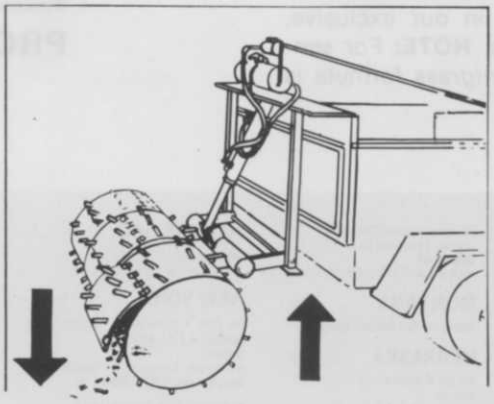

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Insect-Tree Relationships from page 22

Borers attack weakened trees, thereby expediting decline and decay of poor trees and making room for healthier trees. Whereas borers may be considered as secondary attackers or pests in the forests, clearwing moths seem to function as primary attackers or pests in the urban environment. Healthy looking ash trees in the landscape are often attacked by ash borers. These trees would probably survive if the borer were eliminated. On the other hand, ash growing under forest conditions are seldom attacked by this insect.

The landscape horticulturalist, plant pathologist and entomologist can work with the landscape architect to design plantings which will be less susceptible to insect predation and require less maintenance.

I believe principles learned in forest entomology concerning insect tree-host relationships and used in forest management seldom apply to the urban environment. Many insects which are secondary attackers in nature are primary attackers in the landscape because trees are not adapted to this environment. In the forest, insects are adapted to (1) a co-existence relationship with healthy trees, and (2) a destructive relationship with trees which are in a weakened condition.

T. T. Koslowski of the Department of Forestry at the University of Wisconsin, has stressed the fact trees usually undergo some kind of physiological change before they are attacked by a damaging insect. And, the impact of an insect on a tree may or may not be drastic depending upon the physiological condition of the tree and subsequent environmental factors, including temperature, wind, rain, snowfall, etc. All these factors concern available soil moisture and evapotranspiration.

Most studies dealing with insect tree-host relationships indicate the importance of water stress in the severity of damage from insect attack. Bark beetles, borers, sucking insects and lepidopterous defoliators seem to be more damaging either during or immediately following droughts. Some sawflies, however, do better when succulent foliage is available. N. E. Johnson, presently with Weyerhauser Co., has reviewed the literature dealing with these kinds of relationships. He indicates that sweeping generalizations are difficult to make, but a tree can withstand more injury without sustaining damage if it is vigorous and growing on a good (natural) site. How many urban trees are really vigorous and planted on good sites?

Common practices, often unrelated to trees or tree management in the urban environment, contribute added problems. J. D. Carrow and co-workers at the Canada Department of Fisheries and Forestry in Victoria, British Columbia have learned ammonium nitrate fertilizer adversely affects populations of balsam woody aphid, whereas urea and calcium nitrate are beneficial to the insect. Therefore, the kind or form of nitrogen fertilizer used on turf or landscape trees might promote or retard a sucking insect population. Defoliators and borers could be affected similarly.

As Kozlowski stated, insect pests influence their hosts by interfering with rates and balances among internal physiological processes, especially food, hormone and water relations. How the urban environment stresses trees and affects these internal processes must be understood before we can indentify urban conditions which affect stress to which an insect can respond. The complicated system of interaction of tree-host environment has undoubtedly contributed to the lack of studies considering insect tree-host relationships in the urban environment.

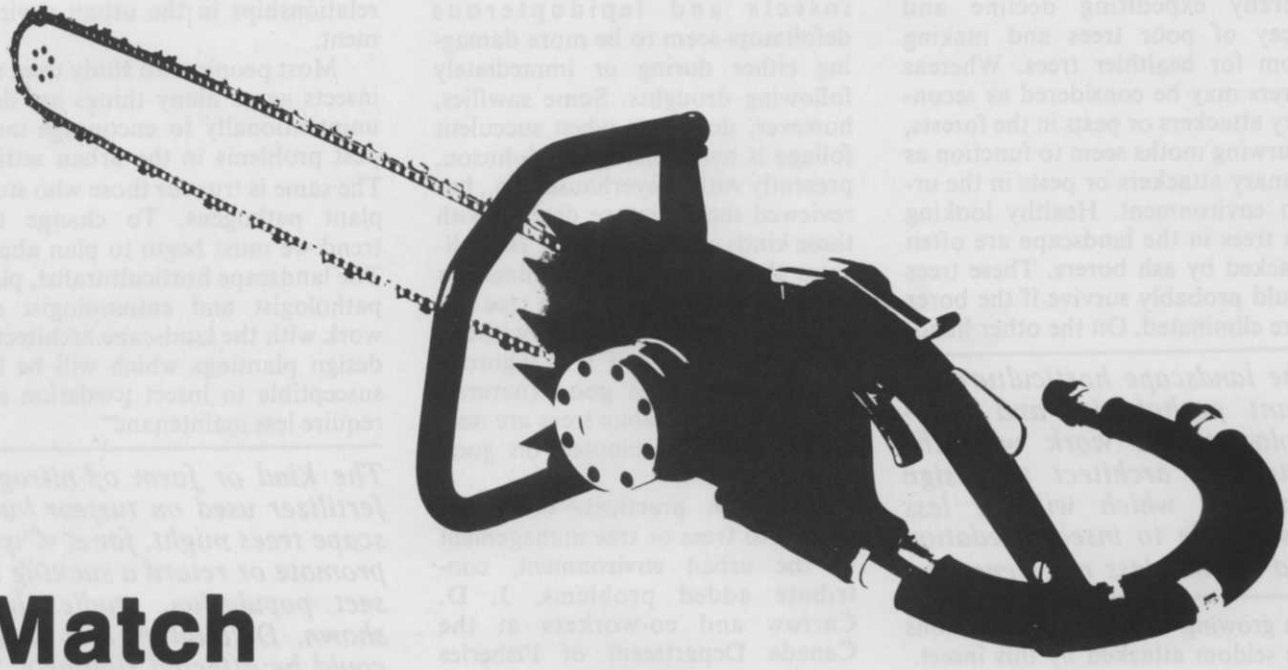
Most studies dealing with insect tree-host relationships indicate the importance of water stress in the severity of damage from insect attack.

Most people who study trees and insects agree many things are done unintentionally to encourage insect pest problems in the urban setting. The same is true for those who study plant pathogens. To change this trend we must begin to plan ahead. The landscape horticulturalist, plant pathologist and entomologist can work with the landscape architect to design plantings which will be less susceptible to insect predation and require less maintenance.

The kind or form of nitrogen fertilizer used on turf or landscape trees might, for example, promote or retard a sucking insect population, studies have shown. Defoliators and borers could be affected similarly.

If ornamental plants are a vital and necessary part of our urban environment, professional maintenance in the form of pest management is justified. Plant protection specialists who conduct surveys and serve as consultants to municipalities, industries and homeowners could implement such programs. However, before this approach can be workable across the nation we must rethink and possibly redefine the term "pest" and supply basic ecological information needed to make management decisions. Sampling methods, predictive models utilizing biotic and abiotic variables, and acceptable pesticides must be developed for our most common and destructive pests.

The research necessary to develop these tools is expensive and cannot be accomplished this century with the present commitment at state and federal levels. We must decide whether or not we will pursue pest management in the urban environment on the basis of sound biological and ecological information. □



Match The Chain Saw to the Job

Match the operator to the job too, says Michigan State University agricultural engineer Howard Doss. His checklist for safe, efficient chain saw work can be used as basic training for every person on your crew.

A chain saw should be carefully selected. Buyers should match the saw to the job they intend to do. They should examine a variety of makes and models before purchasing. Dealers or company representatives should be consulted about the amount and type of cutting to be done, according to Howard J. Doss, Michigan State University extension agricultural engineer.

"The size of the saw, that is, cubic inch displacement, should match the type of work the operator expects to do with it," Doss told WEEDS TREES & TURF. "If too small a saw is continually used for tough jobs, the tendency for the person will be to over-exert. Under these conditions, accidents can occur. The saw should do the work with a minimum of effort on the part of the operator. If a saw keeps binding or stalling, even though it is in good mechanical condition, it is not matched for the job."

The operator should be matched to the job too. "Felling and cutting timber is hard work. Operators should be in good physical condition, able to withstand heavy work periods. Persons who become exhausted easily may be a potential accident victim," he says. Don't hesitate to take frequent rest breaks.

A chain saw equipped with anti-vibration characteristics will help reduce fatigue and avoid numbing and swelling of hands. Also, some units are equipped with chain brakes to stop the chain if the saw kicks back.

Most small saws are equipped with automatic oilers which are sufficient for occasional cutting. But if several face-cords a day are to be cut, particularly hardwood, the saw should have a manual oiler in addition to the automatic system.

A prerequisite to any cutting operation is proper clothing for the operator. "Wear warm, comfortable trim fitting clothing that allows easy movement, light nonslip gloves and good gripping boots or shoes," Doss says.

Safety goggles or eye glasses with safety lens help prevent possible eye injury from flying wood chips or sticks. A good safety hardhat may prevent serious head injury from possible falling material.

"Ear plugs or acoustic muffs are essential because of the saw's high noise level. If ears ring for an extended time after the saw is used, hearing damage may have occurred," Doss says.

Check automatic or manual oilers, air filters and cooling fins for

to page 30

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Chain Saw

from page 28

possible blockage or clogging, before starting. Fuel should be mixed according to owner's manual instructions, stored and transported in a properly labeled heavy gauge metal gasoline container.

"Refueling should be done with the saw on the ground and in an area cleared of possible combustibles at least two tree lengths away from anyone else," Doss says. Under no circumstances should you be smoking while refueling.

Starting should be done with the saw on the ground, one foot placed in the bracket to the rear of the unit. Grip the handle at the top of the saw and pull the starter rope with the other hand after starting controls have been properly set. Never allow another person to assist in starting. If either person slips or lets go, someone may get cut.

Make sure the saw blade does not touch the ground. An operator can cut 40 trees and not do the damage to the chain that striking the ground with it once can do.

A chain saw must be properly maintained to be safe. This includes sharp teeth, correct chain tension, proper lubrication and a well-tuned engine.

"Most routine maintenance can be accomplished by following the owner's manual recommendations.

Every owner should have a good tool kit to help assure continued operation when doing a lot of cutting. It should contain:

—a few extra cans or a bottle (with attached pouring nozzle) of chain oil
—Wrenches to fit all nuts and lugs on the saw
—Screwdriver
—Round file and guide for touching up the chain
—Flat file and depth gauge to file depth guides
—Small brush to clean away sawdust and wood chips
—Extra sparkplug
—Owner's manual (wrapped in a plastic bag)
—Cleaning rags

"If the operator is going to be doing a lot of cutting, an extra chain should be taken along as a spare. Alternating chains every day will greatly prolong the life of the chain and sprocket upon which it runs," Doss says.

If an owner has not had operating experience before purchasing a saw, a few trial cuts should be made to become accustomed with its cutting and handling characteristics. Cut small logs supported off the ground so the chain will not strike the ground. Let the saw do the cutting. Extra pressure need not be applied. Operate with the saw when cutting large diameter logs with the throttle about three-quarters open. Overpowering the saw will waste fuel and create unnecessary engine wear. Underpowering will not push enough air through the cooling fins and may cause engine overheating.

If the chain cuts a wide groove or the cut shows fine powder instead of wood chips, it needs sharpening. If the saw tends to cut a circular path instead of a straight line through the log, the guidebar track, along which the chain runs, is worn on one side. Unless the owner has the proper equipment to correct the problem, chain and guidebar should be taken to the dealer for filing.

The most important safety factor in a chain saw cutting operation is the operator.

"The saw must be adequate to do the job but more importantly, the operator must have the knowledge and ability to safely perform the work," says Dr. Randall Heiligmann, Michigan State University extension forestry specialist.

Certain trees are dangerous to inexperienced operators. Lumberjacks use some of the following expressions to identify problem trees:

An extra chain should be taken along if a lot of cutting is to be done. Alternating chains every day will greatly prolong the life of the chain and sprocket upon which it runs.

—Widowmaker, is a tree with broken or dead limbs or a dead tree "hung up" in another tree. A limb doesn't have to be very big or high in a tree to be capable of causing serious injury if it falls on a person.

—Spring pole is a sapling that is bent and held under tension by another tree. If the spring pole is cut or the other tree is removed from it, the sapling can snap up with a tremendous force and seriously injure anyone nearby.

—Schoolmarm is a tree with a prominent form in the trunk or two trees grown together at the base, making it difficult to predict which way it will fall.

If a chain cuts a wide groove or the cut shows fine powder instead of wood chips, it needs sharpening. If the saw cuts a circular path instead of a straight line, the guidebar track is worn on one side.

"Unless the operator has had plenty of experience or instruction, trees like these should not be cut. Nor should an inexperienced operator try to cut any tree with a diameter greater than the length of the saw blade. This requires special techniques and a person could be seriously injured if the saw made a 'kickback' — jumped backward as the chain at the top of the cutting bar snagged," Heiligmann says.

Before felling a tree, size it up carefully. Note the distribution of the larger branches and wind direction to determine how the tree is apt to fall.

"During the cutting operation the saw should be held close to the body to provide maximum control. Do not work with arms extended. Keep knees flexed and one foot comfortably behind the other to provide maximum balance," Heiligmann says.

Be sure the work area around the tree is cleared of underbrush or obstacles that could be tripped over. Make sure an escape path 45 degrees opposite the direction the tree will fall, is cleared. Examine the tree for loose or dead limbs before felling. If they appear a hazard, remove them first.

When felling a tree:

—Cut through trees less than 6-8 inches thick with one cut.

—On larger trees, make a notch on the side of the tree on which it is expected to fall. It should have a depth approximately one-third the diameter of the tree.

—Make the felling or back cut at least two inches higher than the horizontal notching cut. The felling cut should be kept parallel with the horizontal notch cut.Cut it so that the wood fibers are left to act as a hinge, keeping the tree from twisting and falling in the wrong direction or making a kickback on the stump.

—Keep the guidebar in the middle of the cut (perfectly horizontal) so the cutters returning in the top groove don't recut. Guide the saw into the tree — don't force it. The rate of feed will depend on the size and type of timber being cut. Whenever possible, work with the tree between your body and the saw to minimize the possibility of accidents.

—Remove the saw from the cut and shut it off before the tree falls. Do not cut through the hinge because this may cause the tree to fall in any direction, possibly on the retreating operator.

"After the tree is on the ground, take a look at each limb before making the cut to be sure that cutting the limb off will not bind the saw blade or cause the trunk to roll toward the operator," Heiligmann says.

Do not face the limb squarely. Stand at approximately a 45 degree angle so that if the saw blade slips or makes the cut sooner than expected, it will not strike the shins.

"Avoid sawing with the point of the blade. This greatly increases chances of kickback because the chain guides can easily snag, possibly causing the chain to be thrown," Heiligmann says.

Never make cuts with the saw between the legs or straddle the limb to be cut. Always be aware of the direction the chain will go if it breaks and stay clear of this area.

"Whenever any cuts are being made, make sure the thumb is locked under the bar atop the saw, not laid along side the index finger on the bar. This will prevent the hand from slipping into the chain," Heiligmann says.

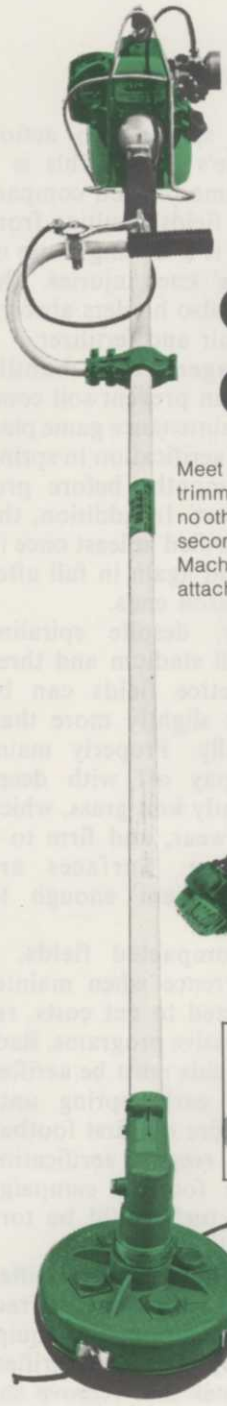
Periodically check the chain for proper tension. Consult the owner's manual for the proper distance the chain should be from the bottom of the chain guide.

"While limbing or cutting the trunk, make sure the saw blade does not touch the ground. An operator can cut 40 trees and not do the damage to the chain that striking the ground with it once can do," Heiligmann says.

If the trunk is supported along its entire length, make cuts from the top (called overbuck), one-third the diameter of the log deep, the length of the trunk. When this is completed, roll it over and make the final cut. This prevents pinching the guidebar.

When the log is supported from both ends, cut one-third the diameter from the top (overbuck) then complete the cut by cutting upward from the underside (underbuck) to meet the first cut.

If the log is supported on one end, make the first cut (underbuck) one-third the diameter then complete from topside by overbucking the upper two-thirds to meet the underbuck. □



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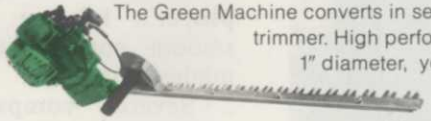

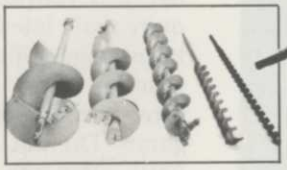

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Soil Compaction

Now Is the Time to Fight It

Turf managers that handle athletic fields can prevent soil compaction with a maintenance plan including timed aerification, proper fertilization, mowing, watering and pesticide use.

by W. W. Sanderson

Sanderson is director of plant at University of Hartford, West Hartford, Conn. His responsibilities include maintenance for the 200-acre campus plus the university's athletic fields. He has more than 30 years experience, part of it helping plan the grounds for the 1938 World's Fair in New York.

It is time to spring into action against "athlete's foot." This is a suitable nickname for soil compaction of athletic fields resulting from heavy use, and is a leading cause of football players' knee injuries. The hard turf crust also hinders absorption of water, air and fertilizer.

Turf managers that handle athletic fields can prevent soil compaction by a maintenance game plan beginning with aerification in spring at least four months before preseason drills start. In addition, the field must be aerified at least once in mid-summer and again in fall after the gridiron season ends.

Surprisingly, despite spiraling costs, a football stadium and three multi-use practice fields can be maintained for slightly more than $20,000 annually. Properly maintained fields pay off with deep-rooted and tightly knit grass, which is resistant to wear, and firm to a player's footing. Surfaces are smooth and resilient enough to minimize injuries.

Severely compacted fields, a common occurrence when maintenance is restricted to cut costs, require more intensive programs. Badly compacted fields must be aerified monthly from early spring until three weeks before the first football game. Do not resume aerification until after the football campaign since loosened turf would be torn out more readily.

A field normally can be aerified in one-half day with a Ryan Tracaire or similar automatic equipment pulled by tractor. Aerifiers have hollow tines that remove soil cores and form tiny reservoirs where air, water or fertilizer can collect. Pass over the field twice with an aerifier to achieve maximum results. Ground pressure ultimately closes core holes.

Let soil cores lay on the ground until partially dry. Then drag the field with a chain-link fence drag or a steel mat. Dragging will break up cores, help fill in low spots in the field, and bury crown (growing points) of the grass.

A mass of new white-colored grass roots will be visible in core holes two weeks after aerification. This helps develop a wear-resistant turf capable of withstanding heavy use. Aerification also assures a "cushioned" surface and improves infiltration to help level the field.

You can further increase playing surface resiliency, protect crowns from being damaged by football cleats and improve soil structure by top-dressing the field with peat or other organic matter. This allows soil and peat to be mixed easily during dragging and expedites breakdown of organic matter.

If there are barren spots in spring, overseed them before every home game. Cleat action will then work seed into the soil.

However, overseeding or sodding provides best results when conducted just ahead of the grasses most favorable growing period. For southern grasses this means spring. But bluegrass, fescue and bentgrass should be sodded right after the last football game.

Fertilization is another key to the field's playing condition. Fertilize at least in spring and early fall immediately after aerification to encourage penetration deep into the root zone. Spring fertilization helps grass break dormancy faster and fall applications nourish grass throughout the football season. A third application can be applied in mid-October.

Put down three to six pounds of actual nitrogen per 1,000 square feet annually no matter how many times you fertilize. Select a fertilizer high in nitrogen, low in phosphorous and medium in potassium. Suggested fertilizer analysis include 30-3-10, 18-5-9 and 22-5-8. The analysis obviously can vary depending upon soil, weather or useage conditions.

Heavy spring fertilization is suggested in the south. Heavier fall applications are favored in the north to help cool-season grasses mask over the brown.

Granular fertilizers with slow-release nitrogen sources minimize grass leaf burn (dehydration) and assure long-term feeding. Soluble forms force rapid greening and are ideal when cold temperatures limit fertilizer responsiveness. Always water after each application to avoid foliage burn.

Spring is the time to apply lime if the pH factor shows acidity below 6.0. Soil samples can be sent to county extension agents to get pH readings. The pH expresses soil acidity or alkalinity with values 7 or below falling into the acid range.

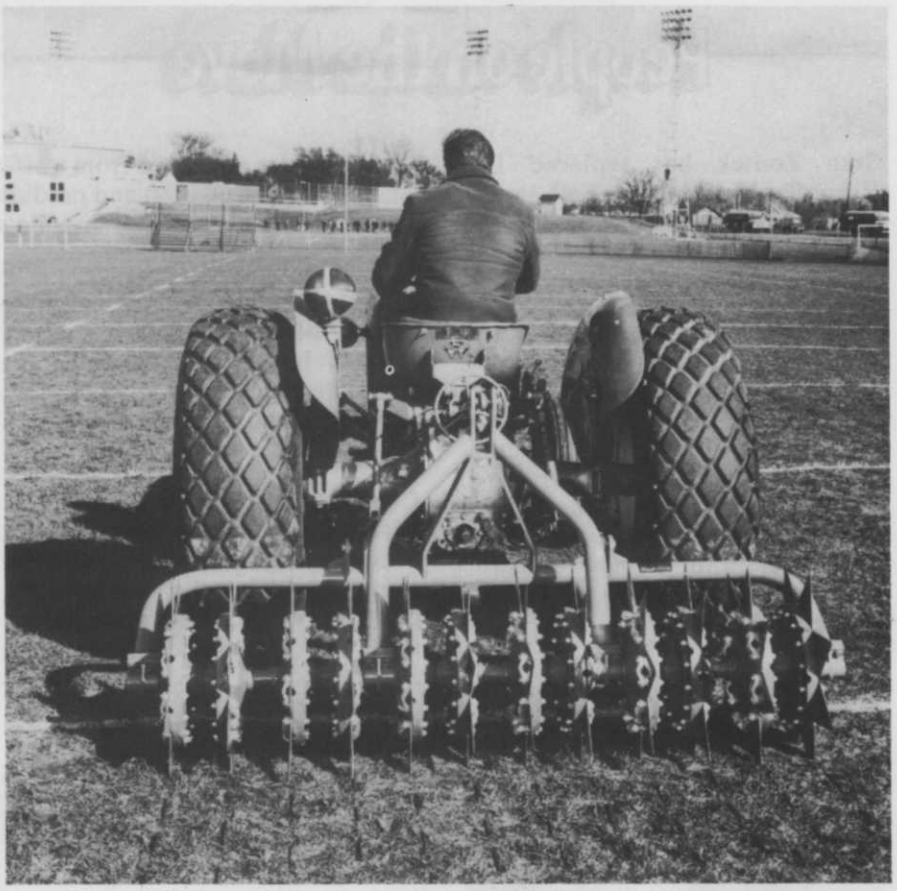
Grass grows best in slightly acid soils and lime is seldom needed in the Midwest. In contrast, soils in the south and New England, often need lime. Usually one application of 50 pounds of lime per 1,000 square feet is sufficient.

Avoid tendencies to overwater. It is better to underwater than to water too much. Saturation shortens roots and shallow-rooted grass plants are torn out easily during games or practice. Fields should be slightly dry on gamedays to allow for rain, provide fast surfaces and minimize turf damage.

Check moisture content with a soil probe after watering. Soil should be moist at least six inches deep. Don't rewater until the reservoir has been depleted. In summer, when cool-season grasses go dormant, water only if turf shows signs of wilting. Water it when grass blades turn a bluish color and begin rolling up.

No task is more mundane than mowing, but an athletic field can be damaged by improper cutting. Mow frequently enough that you never cut more than one-half the leaf per cutting. Higher mowing generally favors deeper roots, provides drought tolerance and permits fewer weeds.

Fescue and bluegrasses can be cut at 2 or 2½ inches. Southern grasses, including Bermuda and zoysia, can be cut one-half to three-fourths inches high. The ideal time to mow — especially during summer — is late afternoon when grass is dry and humidity is lower.



An athletic field normally can be aerified in one-half day with automatic equipment pulled by a tractor. It restores a soft springiness to previously compacted ground by removing soil cores so air, water and fertilizer can penetrate the rootzones.

Pesticide application rounds out any solid athletic maintenance program. The three groups of pesticides normally used include herbicides for weed control, fungicides to fight disease and pesticides.

Crabgrass, foxtail and other annual grasses can be controlled in early spring by applying pre-emergent chemicals before germination. The application can be granular or liquid. If you fail to kill dormant crabgrass seedlings, put down two applications of a selective post-emergent (organic arsenicals) five to seven days apart. Applications will vary depending upon local conditions.

Another option is to co-exist with crabgrass until early fall by letting grass grow higher to block out sunlight needed by weeds. Infrequent watering also discourages additional crabgrass sprouting. Broadleaf weeds such as dandelions are best treated in early to mid-summer.

Chinch bugs, grubs and sod webworms can damage turf. Leaf hoppers are no threat to grass but distract players by getting in their eyes, noses and mouths. Insects can be controlled by chemicals. Apply the chemicals beyone visibly damaged areas because insects extend operations around margins of damaged turf.

Chemicals used against grubs or other below-surface insects must be applied to the surface and watered in to be effective. For above-ground insects, including chinch bugs, water the field before applying chemicals. Don't mow or water for three days and then spray again in a few weeks.

A preventive application of fungicides keeps disease in check. For example, on leaf spot in bluegrass, four applications annually can virtually eliminate damage. Preventive, rather than curative programs, are less time-consuming and costly in the long run. □

People on the Move

Stan Zontek has replaced Lee Record as **United States Golf Association Green Section** representative for the mid-continent region. He joined the USGA's eastern region staff in 1971 as an agronomist.

Officers of the **Long Island Arborist Association** are: John Dougal, Dougal Tree Specialist, Huntington, N.Y., president; Bill Abrams, Prudent Controls Corp., Copiague, N.Y., vice president; Jon Hickey, Parr & Hanson, Hicksville, N.Y., secretary; and James Jordan, Lauchner Motors Corp., Huntington, N.Y., treasurer.

Van Hemert

Kroes

Vermeer Manufacturing Co., Pella, Iowa, has announced a number of promotions: Keith Van Hemert is sales manager of Irrigation Products; Jaap Kroes has been named to head up Vermeer's corporate advertising department as advertising manager; George A. Wassenaar is sales manager of the company's Industrial Division; Doug Wilson is service manager.

Wassenaar

Wilson

Rhodia, Inc., Monmouth Junction, N.J., recently made two appointments to its agricultural division: George W. Hamilton, former manager of industrial sales for Ciba-Geigy Corp., has named market supervisor for non-crop, industrial and turf markets; Robert E. Cummins has been promoted from traffic manager to distribution and product planning manager of the division's operations department.

Doug Myers, former assistant to Oscar Miles at **Broadmoor Country Club** in Indiana, has accepted the superintendent position at **Youche Country Club** in Crown Point, Ind.

Officers of the **Illinois Landscape Contractors Association** are: Richard Price, president; Joseph Sidari, treasurer; Chuck Carren, secretary; Walter Tybon, sergeant-at-arms; new board members, Ralph Little, Walter Clauss, Jim Bussey, Phil Schaafsma and Jim Davids.

Officers of the **Iowa Golf Course Superintendents Association** are: Richard Louvar, St. Andrews Golf Club, Cedar Rapids, president; Steve Tyler, Pheasant Ridge Golf Club, Cedar Falls, vice president; Richard Wynn, Wildwood Golf Club, Charles City, secretary-treasurer.

The Agricultural Division of **Ciba-Geigy Corp.,** Greensboro, N.C. has announced job changes: Gerry Harrison is registration specialist in the registration and toxicology department; Bob Sasser is district sales manager in southeast Texas and Louisiana; John Perrin is planning and procurement supervisor; Mike Fargher is sales training specialist; Gary Gosztonyi is planning and evaluation coordinator.

New officers of the **Nursery Growers Association of California** are: Jack Eddy, Keeline-Wilcox Nurseries, East Irvine, president; Bruce Usrey, Monrovia Nursery Co., Azusa, vice president; Peter Groot, El Modeno Gardens, Santa Ana, secretary; Harry Oda, Oda Nursery, Westminster, treasurer.

The Rocky Mountain Golf Course Superintendents Association has had a number of job changes among its membership: Rollie Cahalane is superintendent at **Columbine Country Club;** Ed Novotny is at **Meadow Hills Country Club;** Stan Rivedal is at **Ranch Course;** and Bill Jewel is at **Park Hill Golf Course.**

Garrett

Baker

Elanco Products Co., Indianapolis, has announced a number of job changes: Richard W. Garrett has been promoted to director of market research and information services; John W. Demaree is agricultural chemicals district sales manager, working out of Columbus, Ohio and covering the Northeast; D. Michael Baker is chemical district sales manager and he will manage the Minneapolis district; J. William Bland, Jr. is agricultural chemicals district sales manager, working out of Atlanta; Larry L. Harris is manager of agricultural market studies; and Richard C. Lindstaedt is director of market research.

Bland

Lindstaedt

Mallinckrodt, Inc., St. Louis, directors accepted the resignation of Stanley H. Anonsen as president and chief operating officer and named Harold E. Thayer to succeed him as president.

Chemagro Agricultural Division, Kansas City, Mo., of Mobay Chemical Corp. has announced three appointments: Heinz Wehner is director of marketing, succeeding Stan Adams, who will assume the position of president and general manager of Chemagro Limited in Canada; Dieter Rappsilber, formerly general manager of Chemagro Limited, has accepted a post with the parent company, Bayer AG, as sales manager for western Europe of the Agricultural Division of Bayer.

please turn page

Is your new bluegrass plagued with weeds?

FYLKING IS PURE.

The famous Swedish beauty, Fylking Kentucky bluegrass seed contains no annual bluegrass *(Poa annua)*, bentgrass or short-awned foxtail. Strict controls and countless inspections guarantee the physical purity and genetically true seed typical of Fylking Kentucky bluegrass. These procedures make your seed dollars go farther. Fylking is one of the lowest priced elite bluegrass seeds on the market.

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Individually harvested, progeny seed from each original "mother plant" is cross tested for genetic purity. Physical and genetic purity are carefully maintained by constant evaluation, chemical spot roguing and physical removal.

Circle 115 on free information card

Officers of the **Michigan Association of Nurserymen** are: John M. Miller, Green Ridge Nursery Inc., Northville, president; Jud Alford, Landscape Supply Inc., Gross Ile, first vice president; John Versluys, Twin Lakes Nursery, Grand Rapids, second vice president.

Ted Zeller has been appointed general manager of **Target Chemical Co.,** Cerritos, Calif. His responsibilities will include branch operations in San Jose, Calif., and Phoenix, Ariz.

Zeller

Hunter

Toro Co., Minneapolis, has announced job changes: In the Outdoor Power Equipment Group, Charles T. Willey is director of sales for turf products; David P. Thompson is director of governmental sales; Ralph D. Murray is director of sales for consumer products; Robert W. Orthey is director of sales for national accounts; Mary Elliott is corporate director of public affairs; **Raincat Irrigation Systems,** Greeley, Colo., a wholly owned subsidiary of Toro, has appointed Richard Hunter vice president and director of operations.

Officers of the **Delaware Association of Nurserymen** are: Jay Windsor, Windsor's Flowers, Plants and Shrubs, Rehobeth Beach, president; Gardner Bunting, Buntings' Nurseries, Inc., Selbyville, vice president; John Weist, John T. Weist Landscaping Service, Laurel, secretary-treasurer.

Don Johnson, formerly superintendent at **Candlewood Country Club** in Whittier, Calif., is now superintendent at **Arrowhead Country Club** in San Bernardino, Calif.

Officers of the **Indiana Golf Course Superintendents Association** are: John L. Morris, Highland Golf and Country Club, president; Jack L. Keidel, Country Club of Terre Haute, vice president; Charles Smith, Brookshire Golf Club, secretary-treasurer.

Dean Gore is superintendent at **Claycrest Golf Course** in Liberty, Kan. He succeeds George Smith who is retiring from full-time duty as pro-superintendent. Gore was formerly assistant superintendent at **St. Andrews Golf Course,** Overland Park, Kan.

Officers of the **Miami Valley Golf Course Superintendents** are: Richard L. Boehm, Wright Patterson Air Force Base Military Golf Course, Fairborn, Ohio, president; Paul Froning, Mercer Country Elks Club, Celina, Ohio, vice president; Thomas Streiff, Weatherwax Golf Course, Middletown, Ohio, secretary-treasurer.

Officers of the **National Arborist Association** are: Boyd Haney, president; Gerald Farrens, first vice president; Kenneth Kirk, second vice president; Larry Holkenborg, secretary; Bruce Walgren, treasurer; and directors, Earl Sinnamon, George Tyler, Walter Money and Erik Haupt.

Officers of the **Georgia Golf Course Superintendents Association** are: Bobby D. McGee, Atlanta Athletic Club, Duluth, president; George J. Burgin, Atlanta Country Club, Marietta, vice president; George M. Kozelnicky, Department of Plant Pathology and Plant Genetics at University of Georgia, executive secretary; Le Roy E. Conard, Capital City Country Club, Atlanta, treasurer.

Ron Roth has been named regional sales representative for northern California and Nevada for **Pen-Gro Corp.,** South San Francisco, Calif.

Tom Gwinn is sales manager for **Bill Hoffman Wholesale Nurseries,** Hollywood, Fla. and also for **Apopka Foliage Nursery,** Florida.

Philip G. Hodges has been named national sales manager and Roland L. Cargill named project leader in herbicide development for the Agricultural Division of **Rhodia, Inc.,** Monmouth Junction, N.J.

C. J. DeBiase has been appointed vice president for Pipe and Pipe Systems, Industrial Products Division, **Johns-Manville Corp.** In his new position, he is responsible for the coordination and direction of manufacturing operations for the company's industrial products, pipe and pipe systems.

Two golf course superintendent job changes in Illinois are: Craig Manfia is superintendent at **Lincolnshire Country Club,** Crete; and Tom Blunk is superintendent at **Hickory Hills Golf Course,** Oak Lawn.

Kenneth P. Krings has been promoted to the position of regional sales manager for the eastern United States by the Outdoor Power Equipment Division, **J I Case Co.,** Winneconne, Wis. The promotion was announced by sales manager Jack Zeigler.

John Bridal has been named manager of special accounts for **Ditch Witch,** a division of Charles Machine Works, Perry, Okla. Bridal will manage the new program directed toward national users of Ditch Witch underground construction equipment.

Bridal

McWhirter

Rain Bird Sprinkler Manufacturing Corp., Glendora, Calif., has announced a number of job changes: Rodney McWhirter is district manager for the northern Florida and Georgia area; Robert Fragala is special products manager; Jim Craft is turf market manager; John Swanson is district manager covering the southern Florida area.

James E. Cook has been appointed special assistant to the vice president of sales and advertising at **Hypro Division,** St. Paul, Minn., of Lear Siegler, Inc. He will report directly to Hypro sales and advertising vice president Conrad E. Letourneau as

part of an expanded customer contact program.

New Officers of the **Western New York Superintendents Association** are Lynn Davis, Brookfield Country Club, president; Chet Kurczab, Stafford Club, vice president; Larry Felt, Hamburg Municipal Golf Club, treasurer; Paul Bukaty, South Shore Country Club, secretary; and Wayne Lamb, Transit Valley Country Club; Ed Cichuniec, Wanakh Country Club; Ray Martelli, Niagara Frontier Country Club; Jack Stellrecht, Lancaster Country Club, directors.

Robert J. Hayes has been promoted to the position of manager of dealer business services for the Agricultural Equipment Divisions of **Allis-Chalmers Corp.,** Milwaukee. He will be responsible for training, financing, location and continued strengthening of the entire agricultural equipment dealer organization in the area of sales, service, parts management and business management.

Jacks

Hayes

Thompson-Hayward Chemical Co., Kansas City, Kan. has announced job changes: Larry D. Jacks is branch manager of the Denver distribution center; Lawrence S. Norton, Jr. is an agricultural sales representative covering North and South Carolina; Desmond H. Greene III is an agricultural sales representative, covering southeast Arkansas and northeast Louisiana; Russell Cook is branch manager of the Beaumont, Texas distribution center; Charles D. White is an agricultural sales representative covering southern portions of Arkansas.

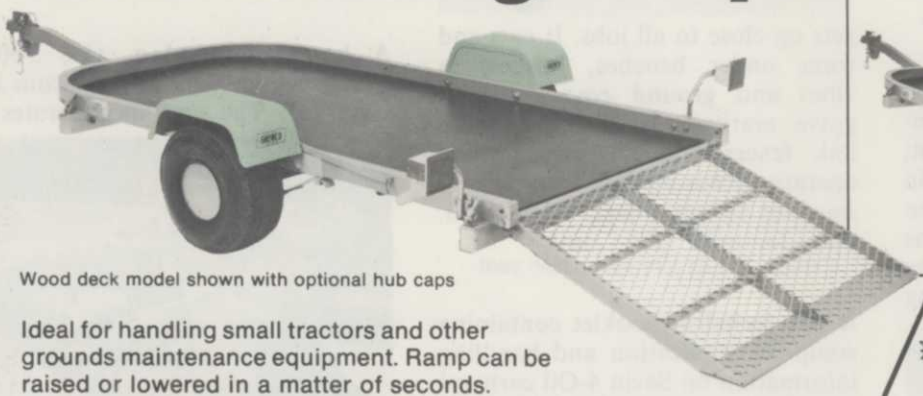
New officers of the **Western Pennsylvania Golf Course Superintendents Association** are: Veo Blackwood, Armco Park Colf Club, president; George Ord, Sewickley Heights Golf Club, first vice president; Ray Dean, Monongahela Valley Country Club, second vice president; and Bart Cornali, West Moreland Country Club, treasurer.

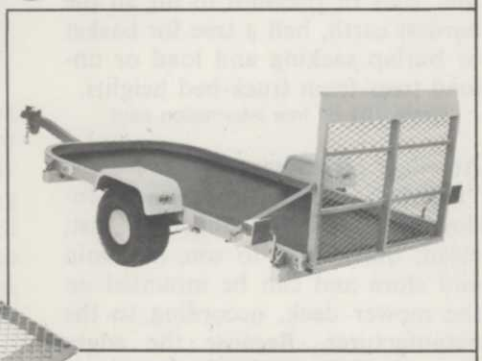
In the state of Washington, Dave Gianoli has left the **Lewis River Golf Course** , near Woodland, to become superintendent at **Green Meadows Golf Club**, Vancouver. John Rogers has left Green Meadows to become superintendent of the **Twin Lakes Golf Club**, at Federal Way, about halfway between Seattle and Tacoma.

Joe Lump is director of facility operations of the **Sun River** complex South of Bend, Ore.

New officers of the **Central Illinois Golf Course Superintendents Association** are Dave Ferris, president; Jay Strasma, vice president; Bill Bonnett, secretary; and Marvin Laird, new director.

Now...Three New Utility Trailers with Loading Ramps





Wood deck model shown with optional hub caps

Ideal for handling small tractors and other grounds maintenance equipment. Ramp can be raised or lowered in a matter of seconds.

Model No. 20-003 with wood deck. Capacity 1,150 pounds; deck width 48″; deck length 96″.

Model No. 20-004 with perforated steel deck. Capacity and dimensions same as Model No. 20-003.

Model No. 20-005 with perforated steel deck. Capacity 2,000 pounds; deck width 72″; deck length 120″.

Snowco also offers eight tilt deck models and two solid deck models with stake pockets. Capacities 900 to 3,500 pounds.

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Circle 113 on free information card

Products

A tree replanter accessory for loaders and tractors has been introduced by Del Zotto Mfg. Inc. The "Hydra-Brute" features a curved-spade design that makes maximum use of available hydraulic power. Other features of the unit, according

to the manufacturer, include an ability to be attached or detached in minutes, quick-couple to available hydraulic-accessory circuits, operate at maximum without outriggers or other accessories, exert more than four tons of pressure to dig in the hardest earth, ball a tree for basket or burlap sacking and load or unload trees from truck-bed heights.

Circle 701 on free information card

An edger attachment is new for the "Hustler" mower from Excel Industries, Inc. The edger is fast, clean, quiet, easy to use, maintain and store and can be mounted on the mower deck, according to the manufacturer. Because the edger does not hang over the trimming

side of the deck, it is safer than most power edgers, the company said. The broom/scraper attachment for the edger makes trimming tough grasses and weeds easy.

Circle 702 on free information card

New tee markers on the market from Lesco Products are made of cycolac plastic, the same material used for

football helmets. The markers are standard five-inch diameter and cemented with epoxy glue. They float and come in red, white and blue colors.

Circle 703 on free information card

TRIM-IT, a new weed-cutting, grass-trimming machine, utilizes a flexible filament of nylon and stainless steel. It offers total safety — and

gets up close to all jobs. It cuts and trims under benches, bushes, in vines and ground cover, around grave markers, sand traps, chain link fences and any area where operator needs upclose trimming. It operates vibration-free. Gielow Co. manufactures the unit.

Circle 704 on free information card

A new technical booklet containing complete application and handling information on Sevin 4-Oil carbaryl insecticide is now available from the manufacturer, Union Carbide Corp. The bulletin describes the product's uses, chemical and physical properties, toxicology and special characteristics of importance to users. Sevin 4-Oil is a new oil-based dispersion of Sevin carbaryl insecticide which provides longer residual insect control and affords certain application advantages, according to Union Carbide.

Circle 705 on free information card

Metal chemical containers for insecticides or herbicides should be

crushed, according to the National Agricultural Chemicals Association. Richway Products is now manufacturing a can crusher that crushes all kinds of metal containers. The unit operates hydraulically and flattens a five-gallon can down to about two inches in a single stroke.

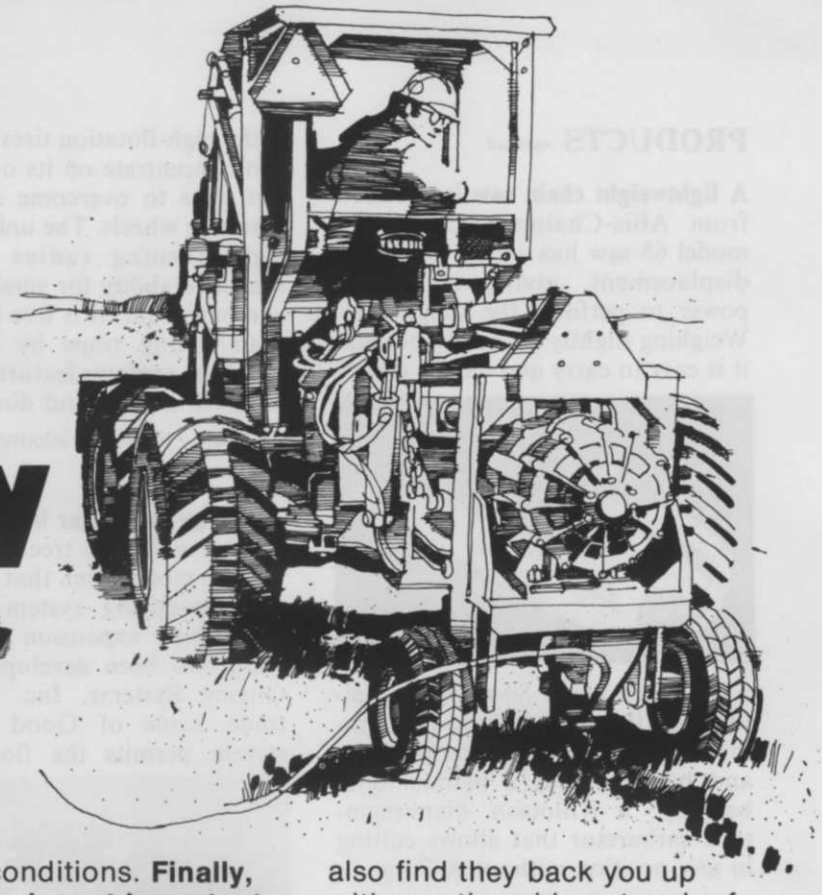
Circle 706 on free information card

A backhoe/loader, the 580C Construction King, is new from J I Case Co. The unit incorporates a

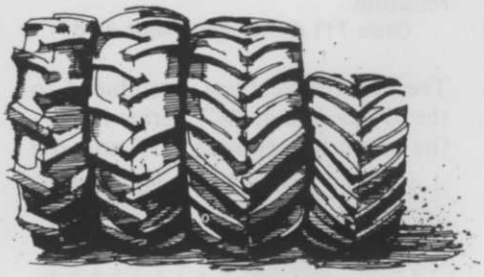
number of features to improve productivity and serviceability, according to the manufacturers. Two of the most significant are a shock-absorbing unitized main frame and a componentized power train, which permit servicing of individual components without disturbing the rest of the drive line.

Circle 707 on free information card

How to choose the right vibratory plow



If vibratory plows fit into your next equipment purchase, get the facts before you buy. **Look for a versatile, multi-purpose machine** that handles not just plow-in work, but a variety of underground jobs . . . combos, rock cutters, loaders, backhoe-blades and reel carriers can save you a bundle in equipment costs alone. Compare construction features like machine weight, plow weight, blade options, tire options, balance and hydraulics. They not only show you how versatile a machine is, but also, how well it's built. **Make sure the unit concentrates vibratory action on the plow blade** . . . . and that it can regulate blade angle and depth for maximum efficiency in various soil conditions. **Finally, and most important, ask for a FREE demonstration.** It not only lets you compare equipment under various plowing conditions, but also gives you a chance to meet the people who will service the equipment after you own it. Why does Vermeer offer these important buying hints? Because, chances are, after you've done your homework on buying vibratory plow equipment, you'll find Vermeer did theirs in building 'em. You'll also find they back you up with a nationwide network of sales and service dealers who have helped thousands customize and maintain equipment for various underground conditions. Find out for yourself why those who own Vermeer equipment keep buying Vermeer. Write, or better yet, call for complete information and a FREE demonstration on Vermeer Trenchers, Vibratory Plows, Rock Cutters, Combos or any Vermeer equipment. It's the world's most complete line.



Vermeer

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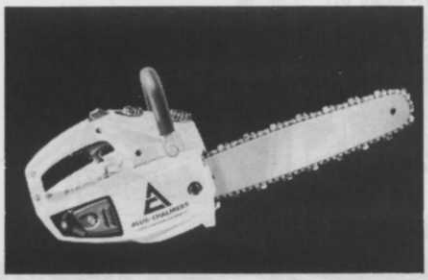
THE DIGGIN' DUTCHMAN

Circle 126 on free information card

PRODUCTS *continued*

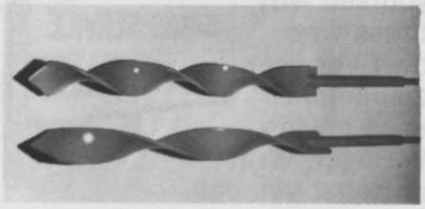
A lightweight chain saw is available from Allis-Chalmers Corp. The model 65 saw has a 1.86 cubic inch displacement, giving it enough power to perform the tough jobs. Weighing slightly over eight pounds, it is easy to carry and handle during



a full day's work. Some of the features of the unit include an automatic oiler to help prolong chain and bar life, plus a manual oiler back-up; a Tillotson diaphragm-type carburetor that allows cutting in any position without stalling.

Circle 708 on free information card

The Earth Worm, from Haupt Tree Co., is a new concept in tree-feeding equipment developed in the field by commercial arborists because of dissatisfaction with conventional augers. Combining a metal treat-



ment which survives abrasive soils with a simplicity of design, the unit will last more than twice as long as conventional augers. Available in two models for either sandy or clay soils and with a variety of shanks for different power heads, the unit will provide years of dependable service because of its unique properties and high wear factors.

Circle 709 on free information card

The Trap King from Jacobsen Manufacturing Co. is featured in a new brochure put out by the company. The brochure explains the unit breaks up sand trap compaction and puts a smooth finish on the trap when done. The unit has wide, high-flotation tires so the rake can concentrate on its own job and not have to overcome compaction from the wheels. The unit also has a tight turning radius and high maneuverability for small traps, the company said. It is five times faster than raking traps by hand. The brochure explains features of the unit, specifications and dimensions.

Circle 710 on free information card

A tree-guying collar having minimal contact with the tree trunk and a release mechanism that disengages the tree-guying system after predetermined expansion of the tree trunk has been developed by Tree Guying Systems, Inc. Under the trade name of Good Guy, this system permits the flow of tree-

growing fluids along the cambium layer of the tree and automatically detaches itself from the tree after the tree has attained a self-supporting size. Thus the physiological functions of the tree are both preserved and utilized. The units come in collars only, or in complete systems including collar, turnbuckles, cables and anchors. Collars are available in rubber, for smaller-caliper trees, aluminum for medium trees and steel for large trees. They are reusable.

Circle 711 on free information card

Trenchers have been introduced to the Ditch Witch "C" series line — the seven-horsepower C77 and the

nine-horsepower C99. These compact trenchers are designed and manufactured to provide ease of maintenance, operating convenience, durability and dependable productivity. Both units will dig ditches from four to six feet wide and to depths of two feet with the rugged 24,000-pound test digging chain. Their compact width and easy maneuverability permit them to be driven through a standard yard gate and easily loaded into a compact pick-up or service van. New design features are a bolt-on pivot assembly, adjustable-height handle bars, wider deck cover, heavy duty bearings on the fully enclosed boom depth control, idler sprocket for drive chain to provide easy and accurate adjustments and convenient controls for the operator.

Circle 712 on free information card

A grounds maintenance equipment brochure is now being offered by the Lawn Equipment Division of Hesston Corp. The brochure is free. It includes features and attachments on its Front Runner GMT, Front Runner Turf Truck and the Front Runner Three Wheeler. The units are designed from the ground up,

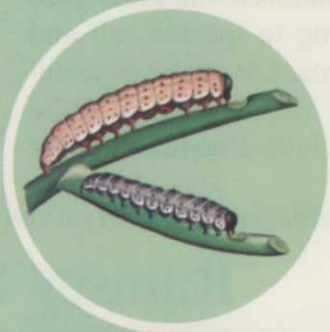
with up-front features and attachments for a variety of grounds maintenance chores in every season. All three models are available in either a 19.8 or 23 horsepower engine. Attachments include three choices of mowers, two vacuum pickup units, snowblower, two angle backfill blades, cab, spreader and sprayer. The units handle a variety of pull-type allied turf attachments.

Circle 713 on free information card

Proxol® 80 SP Insecticide

Stops These Turf-Marauders Before They Start.

Sod Webworm Cutworm Armyworm White Grub



Each sod webworm larva chews up 20 square inches of turf during its average life-span of 20 to 40 days. The cutworm larva can devour up to 36 square inches. Multiply this by the average 300 to 500 larvae generated from each adult in a 1½ to 3 week period and you begin to realize the damage these turf pests can cause.

But you can stop these insect predators *before* they start with Proxol 80SP, an organophosphate insecticide which provides fast, effective control of major turf and ornamental insects. Proxol 80SP acts as both a contact and stomach insecticide for combined quick-kill and residual activity.

With rising costs of maintenance and limited budget allocations, you *need* a sound pest *prevention* program of regular applications of Proxol 80SP to coincide with periods of peak insect activity.

For free color illustrated literature including lifecycles and spraying timetables, write:

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Circle 117 on free information card

Ramsey Seed, Inc.

Announces the Formation of a Turfgrass and Chemical Division

To provide individualized turfgrass seed mixtures for blending to specific soil and climatic requirements. Clover seeds available with Pel-Kote rhizobia pre-inoculation. Chemicals include **Cutrine-Plus** for control of filamentous algae on the surface and Chara, Nitella, and other bottom-growing algae; and **Weedtrine-Plus** for control of a broad range of aquatic plants and algae.

For further information, contact Larry Evans, at:

Ramsey Seed, Inc.

P.O. Box 352 • Manteca, Ca. 95336 • (209) 823-1721

Circle 111 on free information card

PRODUCTS *continued*

A spray head pop-up sprinkler for turf installations has been introduced by Rain Bird Sprinkler Manufacturing Corp. Designated model 1800, the new sprinkler has a pop-up height of 2-3/16 inches to provide adequate clearance, even where a high cut is desired. When

not in use, the nozzle retracts flush with the top, which is completely closed to prevent debris from collecting around the nozzle and stem. A heavy stainless steel retract spring provides positive pop-down of the nozzle to avoid damage from mowing. A surge arrester protects units from damaging surges when the water is turned on. Built-in stem flushing action eliminates sand and debris from around the stem because of flushing that takes place each time the stem pops up.

Circle 714 on free information card

Two mowers in one is what Bunton Co. says about its self-propelled mower. One can mow and trim hard-to-get places and steep grades with this mower. Then it can be con-

verted to a rider for open areas or medium grasses. The rider attachment features instant hitch (without tools), 16-inch pneumatic tires with ball bearings and grease fittings, adjustable seat and brakes.

Circle 715 on free information card

PBI/Gordon Corp. has published a brochure on its professional turf products and distributors, designed especially for the golf course superintendent. Included is information on Dymec 50 turf fungicide, Betamec-4 pre-emergence turf herbicide, Amine 2,4-D turf herbicide, and Aqua-Zorb organic wetting agent.

Circle 716 on free information card

Revised and expanded labels for Sevin sprayable and Sevin 50-W carbaryl insecticide have been approved by the Environmental Protection Agency, according to Union Carbide Corp. For handy reference to the information in the revised labels, a new brochure entitled *A Summary of Sevin* is available for free. The brochure has a special section on insect control for shade trees and ornamentals, and lawn insect control.

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Controls those water weeds—fast, efficiently, economically...and without harm to the environment or fish when applied as directed on the label. Aquathol K may be easily applied by an individual to control weeds around his dock or lake front beach...or applied professionally for effective weed control. It may be obtained locally in either liquid or granular form. When applied as directed, there is seldom a need for re-application during the season.
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Meeting Dates

Iowa Golf Course Superintendents Association Meeting, Carroll Country Club, May 18.

Oregon Seed Trade Association Eighth Annual Convention, Salishan Lodge, Gleneden Beach, May 18-20.

Rocky Mountain Golf Course Superintendents Association, Inverness Golf Course, Englewood, Colo., May 20.

Metropolian Golf Course Superintendents Association Meeting, Greenwich County Club, May 20.

Florida Nurserymen and Growers Association Meeting, Thunderbird Hotel, Jacksonville, May 20-22.

International Society of Arboriculture, Western Chapter, Meeting, Hyatt Regency Hotel, San Jose, Calif., May 23-26.

California Association of Nurserymen, Refresher Course, California State Polytechnic College, San Luis Obispo, June 1-3.

International Marketing Conference sponsored by The Fertilizer Institute, The Greenbrier, White Sulphur Springs, W. Va., June 6-9.

Indiana Golf Course Superintendents Association Meeting, Valle Vista, June 8.

Hawaii Association of Nurserymen Conference and Trade Show, Hilton Hawaiian Village, Honolulu, June 9-11.

Southern California Golf Course Superintendents Association Sprinkler Irrigation Conference, Lake Arrowhead, June 11-13.

National Arborist Association First Management Seminar, O'Hare Hilton, Chicago, June 15-16.

Arizona Landscape Contractors Association Annual Meeting, Mountain Shadows, Scottsdale, June 16-20.

Metropolitan Golf Course Superintendents Association Meeting, Pelham Country Club, June 17.

Rutgers Turfgrass Research Field Day, Adelphia Research Center, Adelphia, N.J., June 23.

Golf Course Builders Association Meeting, Fresno and Del Monte Lodge, Monterey, Calif., June 24-27.

Illinois State Nurserymen's Association Summer Conference and Annual Membership Meeting, Marriott Lincolnshire Resort, Lincolnshire, Ill., June 28-29.

American Association of Nurserymen Annual Convention, Sheraton-Boston Hotel, July 10-14.

76th Annual Meeting of the American Society of Landscape Architects, Hotel de Coronado, San Diego, Calif., July 11-14.

Aquatic Plant Management Society Annual Meeting, Pier 66, Fort Lauderdale, Fla., July 11-14.

Indiana Golf Course Superintendents Association Meeting, Tippecanoe Lake Country Club, July 13.

Rocky Mountain Golf Course Superintendents Association Meeting, Los Verdes Golf Course, July 15.

Midwest Association of Golf Course Superintendents Meeting, Exmoor Country Club, July 19.

American Sod Producers Association Summer Convention and Field Days, Treadway Inn, Newport Harbor, R.I., July 21-23.

American Association of Nurserymen 21st Management Seminar, Colorado State University, Fort Collins, July 25-30.

The Fertilizer Institute Trade Fair, Cincinnati Exposition Center, July 26-28.

Penn Allied Nursery Trade Show, Hershey Motor Lodge Convention Center, Hershey, Pa., July 27-29.

University of Massachusetts Third Annual Turf Field Day, South Deerfield Turf Station, South Deerfield, July 28.

Tennessee Golf Course Superintendents Association Meeting, Crockett Springs National Golf Course, Brentwood, August 2.

Ohio Turfgrass Field Day, Columbus, August 5.

International Society of Arboriculture Annual Meeting, Stouffer's Riverfront Towers, St. Louis, Mo., August 8-12.

Professional Grounds Maintenance Society Annual Meeting, Greenfield Village, Dearborn, Mich., August 9-13.

Georgia Golf Course Superintendents Association Educational Program and Business Meeting, Northwood Golf and Country Club, Lawrenceville, August 9-10.

Erosion Control Symposium for Erosion Control Contractors, Denver, August 9-10.

Symposium on Reclamation of Drastically Disturbed Lands, Ohio Agricultural Research and Development Center, Wooster, Ohio, August 9-12.

Indiana Golf Course Superintendents Association Meeting, Prestwick Golf Club, August 10.

Plant Growth Regulator Working Group, Baton Rouge, La., August 11-14.

Rocky Mountain Golf Course Superintendents Split Meeting, Colorado City, Cheyenne, Glenwood Springs, August 19.

Rhode Island Turfgrass Field Day, Turfgrass Research Farm, University of Rhode Island, Kingston, R.I., August 25.

International Symposium on Biological Control of Weeds, University of Florida, Gainesville, August 30-Sept. 2.

Pacific Horticultural Trade Show, Anaheim Convention Center, California, Sept. 11-13.

Fourth Arkansas Turfgrass Field Day and Conference, Country Club of Little Rock, Sept. 14-15.

Turf and Landscape Day, Ohio Agricultural Research and Development Center, Wooster, Sept. 14.

Indiana Golf Course Superintendents Association Meeting, Westbrook Elks, Sept. 21.

The Fertilizer Institute International Fertilizer Conference, Waldorf-Astoria Hotel, New York, Sept. 19-22.

Farwest Nursery Show, Memorial Coliseum, Portland, Ore., Sept. 22-24.

Northern California Turfgrass Council Turf and Landscape Irrigation Seminar, Asilomar Conference Grounds, Pacific Grove, Calif., Oct. 1-3.

Midwest Association of Golf Course Superintendents Meeting, Butler National Golf Club, Oct. 4.

The Fertilizer Institute International Fertilizer Conference, The Fairmont, New Orleans, La., Oct. 6-8.

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Circle 132 on free information card

NEWS *from page 8*

Pennsylvania Turf Council Gives $16,000 to Penn State

The Pennsylvania Turfgrass Council has given $16,000 in grants to turfgrass programs at Penn State University in University Park, Pa.

The Council recently presented $11,000 to Dr. James L. Starling, head of the agronomy department. These funds have two purposes — $6,000 is earmarked for a Ph.D. graduate assistantship for David Wehner, and $5,000 is to be used for renovation of the soil modification area at the Joseph Valentine Research Center.

Also, Dr. Herb Cole has accepted a check for $5,000 from the Council on behalf of the Department of Plant Pathology at Penn State. The funds will be used to help defray the costs associated with analyzing the diseases affecting the plant samples sent to the diagnostic lab.

Borer Control Research Conducted in St. Louis

Dr. John Severson, a biologist for the St. Louis University Department of Arts and Science, has done research to prove that borers can successfully be controlled in municipal street trees with a minimum cost and effort.

His research to perfect an improved technique of controlling insects was prompted by recent regulations of the federal Environmental Protection Agency regarding uses of certain insecticides in municipal tree spraying programs, that have hampered use of blower-mist sprayers, it was reported by Robert J. Stoffel in *Trees*.

In a cooperative research venture with the St. Louis Community Development Agency, Dr. Severson treated a boulevard planting of Modesto ash infested with lilac tree borer. The insects hatch in May and June and feast on the cambium layer throughout the summer. The tree is soon completely pruned of top growth by the insect girdling the limbs.

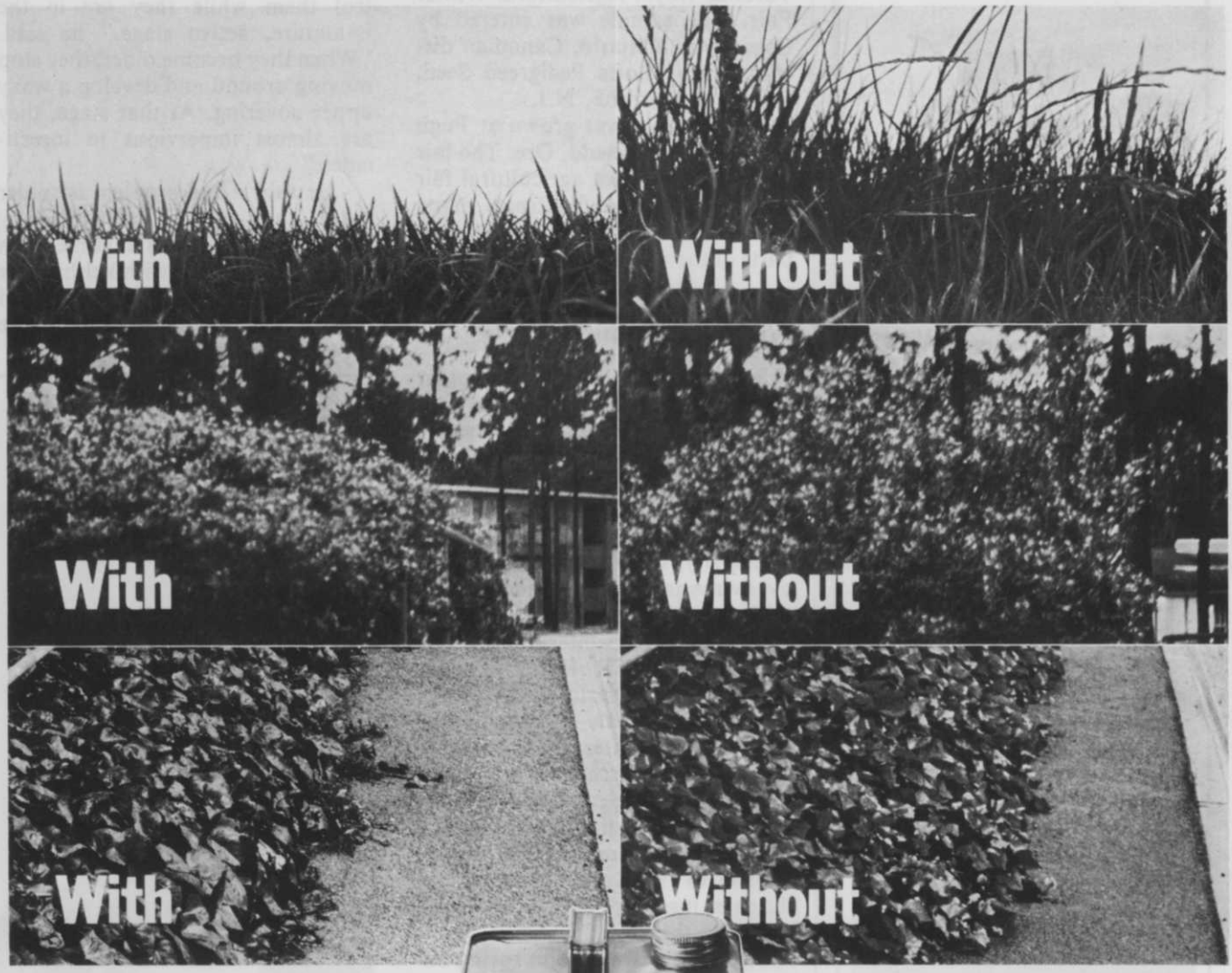
A systemic insecticide was dissolved in a nutrient solution containing iron chelate and injected into the root zone. A specially designed patented drill/injector was used to go rapidly through the concrete and adjacent soil without interference of roots and rocks. The drill/injector is attached to a self-contained unit with regulating control tanks. Various concentrations of systemic insecticides were used with some being dissolved only in water. Water-soluble syes were used as indicators.

Results showed rapid translocation of the systemic insecticide into the woody tissue and leaves. Dead insect larvae were found in their tunnels containing the dye.

please turn page

Connecticut Landscape Contractors Association officers are: (from left) Albert Glazier III, secretary; Dana Hinman, treasurer; William Butler, vice president; and James Cunningham Jr., president.

Don't kill it. Control it.



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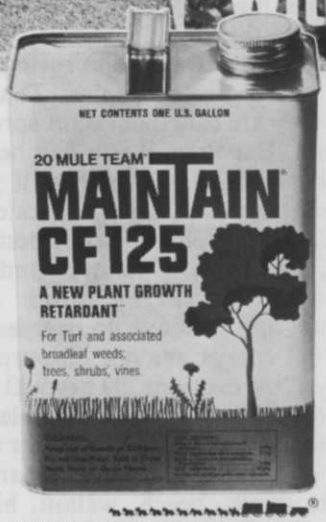

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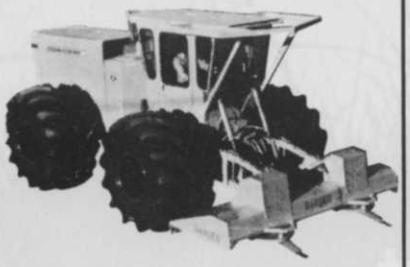

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Baron Kentucky Bluegrass Wins Toronto Fair Award

Baron Kentucky bluegrass was awarded first prize recently at the Toronto Royal Agricultural Winter Fair. The sample was entered by Oseco Ltd., Ontario, Canadian distributor for Lofts Pedigreed Seed, Inc., Bound Brook, N.J.

The sample was grown at Pugh Seed Farms in Shedd, Ore. The fair is Canada's largest agricultural fair and seed show and attracts many different seed variety entries from all parts of the world.

Use Dormant Oil Sprays To Control Aphids, Scale

If aphids, scale insects or spider mites were a major problem in your landscape plants last year, get a head start on control this year by using formant oil sprays in spring. According to Jim Liebherr, extension entomologist at Michigan State University, dormant oil sprays kill overwintering insects and eggs by suffocating them.

"Aphids overwinter as eggs," he told WEEDS TREES & TURF. "Some types of scale — oystershell and euonymus scale — are in the egg stage during winter, and others — such as juniper scale — are nearly full-grown. Spider mites usually overwinter as fertile females hidden in cracks and crevices. Oil sprays applied to twigs and branches coat the eggs, insects or hiding places and suffocate the pests."

Oil sprays are used in spring before plant growth begins. That is why they are called dormant sprays, he said. Use them if you had heavy aphid problems last year or if you can see large populations of scale insects on plants, he said. For best results, spray on a sunny, windless morning in spring when the temperature is above 45 degrees.

"Oil sprays are not all-purpose sprays," he cautions. "They will not control all your insect problems, and they should not be used on certain plants. Sugar maple, Japanese maple, birch, beech, walnut, hickory and butternut may be burned by oil sprays. Do not use oil sprays on blue spruce either — it will remove the bloom."

He said if you cannot use dormant oil sprays to control aphids and scale in spring, insecticide sprays can be used through summer. The best time to spray depends on the insect. "If your problem is scale insects, you must control them while they are in the immature, active stage," he said. "When they become older, they stop moving around and develop a waxy upper covering. At that stage, they are almost impervious to insecticides."

He said if the problem is spider mites, they can be controlled by spraying leaf surfaces anytime from spring through fall with kelthane or tedion. Aphids can be controlled during summer with insecticide sprays of malathion of diazinon.

Siemens

New Course Builders' Head Is Siemens of California

Nick A. Siemens is 1976 president of the Golf Course Builders of America.

A former school teacher, he entered the contracting business 24 years ago and has built many golf courses along the West Coast and as far east as Kansas. He is president of Siemens' Contracting, Inc., Fresno, Calif. He succeeded Frank A. Underwood of Bowie, Texas.

please turn page

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DACONIL 2787® pours it to nine fungus diseases

Broad spectrum Daconil 2787 fungicide controls nearly all of the fungus diseases found on golf greens, tees and fairways, as well as many ornamentals.

And now it is available in convenient flowable or wettable powder form.

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NEWS *continued*

New Pesticide Periodical Now Available for Free

A new periodical from Waters Associates, entitled *Pesticide Notes*, covers all aspects of pesticide analysis. Assays of fungicides, herbicide metabolities and insect growth regulators are discussed along with an inexpensive clean-up procedure in the first issue.

Detailed case studies of successful analyses are offered to the interested reader. For a free subscription to this newsletter, write Waters Associates, Inc., Maple Street, Milford, Mass. 01757.

Ohio's Lakeshore Equipment Honors Three Top Salesmen

Lakeshore Equipment and Supply, Elyria, Ohio, honored three of its top salesmen at its recent annual awards dinner.

First in sales was Art Wick, who covers northeastern Pennsylvania, and has been with the company since 1971. Second in sales was Herb Cole, who covers northwestern Ohio and eastern Michigan and has been with the company since 1963. Third in sales was Larry Crittenden, who covers northeastern Ohio and western New York, and has been with the company since 1972.

New Sprinkler Test Facility Operated by Johns-Manville

A new test facility which accurately measures the performance of irrigation products is now in operation in the Fresno, Calif. plant of Johns-Manville, Denver, Colo.

Douglas A. Bruce, manager of product development for the company's Ag-Turf Division, describes the precipitation testing equipment as accurate to one hundredth of an inch. Tests results in a profile or graphic illustration of how a sprinkler head distributes water. Performance is electronically measured, and a visual read-out is produced. Flow rate is measured with an accuracy of 0.5 percent of demand.

Purpose of the new facility, according to the division's marketing management, is two-fold. Its initial purpose is to insure that irrigation industry customers get equipment performance in line with specifications. Beyond this, the company plans to develop programs that will permit analysis of an irrigation customer's needs, taking into account such basic variables as climate, soils and type of turf. This will permit Johns-Manville to determine and recommend optimum designs for proposed irrigation systems.

BASF Reports Record Year, Basagran Sales Up Sharply

Basf Wyandotte Corp., Parsippany, N.J., reported record sales and earnings for 1975. The company said sales of inorganic chemicals as well as the newly introduced Basagran herbicide increased sharply.

Sales totalled $589.8 million, a gain of 14 percent compared to $517.4 million in 1974 sales.

Environmental Industries Buys Western Landscape

Environmental Industries Inc., SanDiego Calif. said an agreement in principle has been reached to acquire Western Landscape and Interstate Landscape, San Diego, according to Burton Sperber, Environmental president.

Western Landscape has been providing its services to the residential market in San Diego for over 12 years and is believed to be one of the largest companies of its kind in the industry. They offer their clients a total package including not only landscaping and sprinklers but such other items as patios, swimming pools, paddle and tennis courts and putting greens.

Interstate Landscape has provided landscape services for commercial, industrial and public works developments in San Diego for over six years. Environmental will merge this operation with Valley Crest Landscape, its wholly-owned subsidiary with offices throughout California, as well as in Denver, Colo. and Seattle, Wash.

Management of Western Landscape headed by Robert Weiland and Charles Barranco will continue and the company will be operated as a wholly owned subsidiary of Environmental Industries, Inc.

Dow Sales are $1.14 Billion In First Quarter

Dow Chemical Co., Midland, Mich., said it earned $125.9 million on sales of $1.14 billion in this year's first quarter.

The results include a gain of $20.5 million on the sale of investments in several unconsolidated foreign companies. The company said U.S. business is continuing steady improvement and that Europe is also showing signs of moving out of a recession.

Bakersfield Turf Distributor Appointed by Rain Bird

Rain Bird Sprinkler Manufacturing Corp., Glendora, Calif. has named Smith Turf & Irrigation Supply, Inc. as its franchised turf distributor for the Bakersfield, Calif. area.

Smith Turf president Richard Smith said his company will carry the complete Rain Bird turf line and other related products and will offer complete service to the irrigation trade. Larry Bridges is manager and sales representative for the firm.

Johnson

Lawn-Boy/Pioneer Salesman Wins Indiana Sales Award

Jerry L. Johnson, distributor salesman for Lawn-Boy/Pioneer Sales of Indiana, won the 1976 Indiana Distinguished Salesman Award. The statewide award is presented annually by the Sales and Marketing Executives of Indianapolis, Inc.

Johnson earned the award by exceeding his 1975 sales goal by 25 percent in a declining market. He calls on dealers throughout northern Indiana and is the second Lawn-Boy/Pioneer sales representative to win the award. James L. Van Busum received the award last year.

Wind King Mfg. Company Purchased by Kuivanen

Wind King Manufacturing Co., Merrill, Iowa, now sells its line of trenching machines under the name of Digz-All, Inc.

The company was purchased by George Kuivanen, who is president of the newly formed corporation. G. Chesen is treasurer, and L.Tokar is secretary.

$2.3 Billion in Sales Reported by FMC Corp.

FMC Corp., Chicago, in its annual report, said 1976 could be a "year of record high performance" if the economic recovery continues and order rates increase at certain of its machinery divisions.

For 1975, the company earned $108.2 million on sales of $2.3 billion.

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NEWS *continued*

Three New Distributors Named by Weather-matic

Three new lawn and turf irrigation product distributors have been named by Weather-matic Division of Telesco Industries.

Hawaii Irrigation Supply Co., Honolulu, will be exclusive distributor for the Hawaiian Islands. Turf Equipment & Supply Co. will handle Phoenix and Las Vegas. Irrigation & Sprinkler Supply Co. will handle Tucson.

Crabgrass Control Methods Explained by Agronomist

Crabgrass is a hot weather annual with a seed that winters in the soil and then sprouts when spring temperatures reach about 55 degrees. The weed spreads by trailing runners that infiltrate turf rapidly in warm weather, choking and smothering it.

"There are a number of ways to take some of the curse out of crabgrass," according to Doyle Jacklin, agronomist with Jacklin Seed Co., Spokane, Wash. "One is to prevent sprouting of its seed. Pre-emergence crabgrass preventers do that. Precise timing is required, before the crabgrass seed sprouts, and uniform blanketing of the turf where the crabgrass customarily grows is necessary."

He said preventers may depress the turf slightly, restraining depth of rooting and perhaps altering color and texture somewhat. One can wait until crabgrass has definitely made its appearance, and then spray with post-emergence arsonates a few times. This kills most of the crabgrass with only some momentarily discoloration of the turf.

"But there is still another way to fight crabgrass," Jacklin said. "Why not let your turf fight most of the battle? It will do this if it is dense and vigorous. Moderate fertilization and high mowing early in spring are often sufficient to help the turf fight crabgrass. This will be especially effective if the turf is leafy, strongly rhizoming cultivars or if these cultivars are overseeded into thin turf."

please turn page

The hill leveler!

Goodall self-propelled mowers really cut hills down to size! Steep grades can be cut with finger touch ease. Independent power to each large traction wheel prevents side-slipping. Recessed wheels permit close trimming. Twin blades are designed to mulch and discharge grass clippings evenly. Other features include: five forward ground speeds, elevated fuel tank for better fuel flow. GOODALL LAWN-TURF EQUIPMENT IS DESIGNED AND BUILT TO DO THE JOB BETTER . . . LONGER! Goodall equipment is available from 8-inch to 52-inch cut.

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Spring Is the Best Time To Control Bluegrass Billbugs

May is the best time to control adult bluegrass billbugs with an approved insecticide, according to Dr. Dean Kindler, entomologist of the U.S. Dept. of Agriculture Research Service, Peoria, Ill.

The billbug, a native pest known for 100 years, has only recently increased to damaging numbers. Dr. Kindler told WEEDS TREES & TURF it has been identified in 30 states east of a line from western South Dakota into Texas, as well as in Colorado, Utah, Idaho, Washington and Oregon.

"Billbug larvae can completely destroy the root system in a patch of grass," he said. "This damage, during dry, hot weather in late June to late August, often is attributed to lack of water, fertilizer burn or disease. Larvae are still feeding on the roots when damage first becomes noticeable. But insecticides applied then do not always give satisfactory larval control. The insecticide becomes chemically tied up in the thatch and does not penetrate the soil deeply enough and with sufficient toxicity for control."

Dr. Kindler's studies in cooperation with the University of Nebraska indicate some bluegrass varieties are more readily damaged than others. The most resistant ones have been Park, Nebraska common, South Dakota certified, Delta, Fylking, Newport and Nu Dwarf. The most susceptible varieties are Warren's A-20, Nugget, Victa, Baron and Sydsport. The billbug prefers Kentucky bluegrass and also infests but seldom seriously damages fescue and perennial rye. For control, Dr. Kindler suggests approved insecticides such as diazinon, dursban or sevin.

He said the adult bluegrass billbug overwinters on the soil surface in protected spots such as under trees or bushes. Adults become active about April, depending on temperature. From late May into July, the females lay eggs in holes they have chewed in grass stems near the plant's crown. Larvae hatched from the eggs feed initially on stems, then move to the roots and cut them off.

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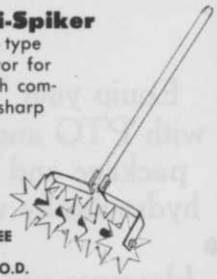

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Ask the Lawn Expert Book Published by Paul Voykin

Paul N. Voykin, superintendent at Briarwood Country Club, Deerfield, Ill., has written his second book entitled *Ask the Lawn Expert,* published by Macmillan Publishing Co., 866 Third Ave., New York, N.Y. 10022.

Voykin tells how to choose and care for a perfect lawn for almost any use and climate. Written largely in question-and-answer format, the book deals with actual queries Voykin received in response to his writing and lecturing and radio and television appearances. He tells how to plant or restore home lawns, how to control insects and weeds and the best way to fertilize, water and mow.

NAA Management Seminar Set Next Month in Chicago

The National Arborist Association will host its first management seminar June 15-16 at the O'Hare Hilton in Chicago. Budgeting, accounts receivable, cash flow and cost analysis will be emphasized.

For further information, contact Robert Felix at association offices at 3537 Stratford Rd., Wantagh, N.Y.

Pesticide Training Movie Available from Arborists

Pesticides — Play It Safe, a movie designed to help train workers using pesticides, is available from the National Arborist Association.

The film reminds workers of the hazards of pesticides, and is available for rent at $25. For further information, contact Robert Felix at NAA headquarters at 3537 Stratford Rd., Wantagh, N.Y. 11793.

J-M's Ag-Turf Division Expands Irrigation Line

Johns-Manville's Ag-Turf Division has expanded its irrigation systems line to include Greenlawn Sprinkler Company products for lawn and garden applications.

The plastic sprinkler equipment manufactured by Greenlawn will complement Johns-Manville's line of brass products. Included among the Greenlawn products are plastic pop-up spray heads, a plastic valve line and accessories.

please turn page

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Weed Society Scientists Name Hilton Award Winner

Dr. James L. Hilton, chief, pesticide action laboratory, Agricultural Environmental Quality Institute, Agricultural Research Service U.S. Department of Agriculture has been selected to receive the Seventh Ciba-Geigy/Weed Science Society of America Agricultural Recognition Award.

Hilton has been a researcher with the U.S. Department of Agriculture since 1956. His research work has involved the modes and actions of various herbicides in the soils. His research efforts have included studies of dalapon, trifluralin, simazine and the uracils. Ciba-Geigy Corp. is headquartered in Greensboro, N.C.

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Hercules Sales Rise 25% In First Fiscal Quarter

Hercules Inc., Wilmington, Del. reported sales for the first quarter rose almost 25 percent from the year-earlier $321 million.

President Werner C. Brown said heavy start-up costs at several intermediate chemical plants could penalize earnings somewhat when final figures are released. The company earned $4.9 million in last year's first quarter.

Expansion of Sales Force Announced by J I Case Co.

An expansion of the field sales force of the Outdoor Power Equipment Division of J I Case Co., located in Winneconne, Wis., has been announced by Jack Ziegler, sales manager.

Zeigler explained the realignment and expansion of the sales effort will afford "greater and closer contact between our sales force and their respective dealers." He said the division formerly had 16 sales persons serving a dealer network in 33 states. The force has been expanded to 25.

Plant Nutrient Increases Reduced Quality of Water

Connecticut Agricultural Experiment Station scientists in New Haven have reported increases in plant nutrients have reduced the quality of water in 15 of 20 Connnecticut lakes during the past 35 years.

Wendell Norvell and Charles Frink of the Department of Soil and Water have reported many of the lakes they studied have become eutrophic due to these increases in plant nutrients. "Most of the lakes have become more fertile, especially in the nutrient phosphorus," Norvell told WEEDS TREES & TURF. "The lakes grow considerably more algae today than they did in the past, and the transparency of the waters and the supply of oxygen in the deep water are reduced."

Norvell said their results show clearly phosphorus is more important than nitrogen in controlling the growth of algae in the lakes.

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 50c per word. Box number, $1. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

FOR SALE: 2 used aerial baskets — 50 ft. working height, 2 Asplundh brush chippers. Bean sprayer, 35 G.P.M. Vermeer stump cutter 1560. Parkway Tree Service, Milwaukee, Wisconsin. Phone 414 257-1555.

RYAN 18" SOD CUTTER, automatic cut-off, 1 year old, best offer. — Super D Weed-tone 8 — 30 gallon barrels made by Amchem, best offer. Bosgraaf Sales Company, 5501 40th Avenue, Hudsonville, Michigan 49426. Phone 616 669-1810 ask for Ted or Gary.

FOR SALE: 52 ft. Skyworker, 85 ft. Arlo crane, Vermeer tree spaces, late model Hydro-Ax's, other used equipment. Please contact Jeff Gould, P.C. Gould Sales Co., Box 178, Essex, Connecticut 06426. 203 767-1636.

HYDRAULIC LAWN & TREE SPRAYER — 57 horsepower gas engine, 60 gallon min., 3 stage pump, 300 gallon steel coated tank, electric reel, 250 feet of hose with adjustable nozzle, trailer maintained, used just 20 hours, $3200.00. Phone 207 848-5707.

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ROLLER, Tractor drawn, water filled, 10 ton, 8 ft. wide, excellent condition. Sod Farms, Box 2113, Naples, Florida 33940.

VERMEER 700 TM tree transplanter on Chevy truck. Shade Tree Movers, R6, Box 86, Warsaw, Indiana 46580. Phone 219 267-3970.

WANTED: 18" Ryan rider cutter and roller. D & B Services, Inc., RR1, Escanaba, Michigan 49728. Phone 906 274-5414.

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REPS WANTED To call on Golf Course Superintendents, on State Municipal and Institutional Park and Landscape Superintendents, as well as distributors selling above trade. We make Tu-Tuf Cross-laminated poly, and leading ground barrier sheeting in the developing Purr-Wick System. Predictions are for growing demand next 10 years. Only reps with good following above fileds will be considered. Strictly commission basis. Reply stating experience, number of salesmen, your organization, main lines handled, territory you now cover. Address Chairman, Sto-Cote Products, Inc., Drawer 310, Richmond, Illinois 60071.

YEAR ROUND WORK — A.A.A. Tree Service, Inc., of Florida. Looking for experienced top notch climbers to work by the hour, on percentage, or under franchise in areas of Florida. Also needed-older men with sales ability. Henry Hardy, Jr. P.O. Box 6173, Orlando, Fla. 32803. Phone 305 336-5242.

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EMPLOYMENT WANTED 30 — 2-year college horticulture graduate available for management trainee position in turf, nursery, greenhouse, landscaping and garden center sales. Contact: Roscoe Gibson, State Fair Community College, Sedalia, Missouri 65301. Phone: 816 826-7100.

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JACOBSON F-20 gang diesel mower. 5 blade rough cut on pnematic tires, excellent condition. Harley Johnson, 5226 Frenchmen Rd., Hugo, Minn. 55038. Phone 612 429-6678.

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NEXT MONTH

The June issue of WEEDS TREES & TURF will feature a special report on aquatic weed control — the problem areas, chemical and other means of control, the manufacturers — and a report and manufacturer's update on fungicides.

Trimmings

The brochure published by the American Sod Producers Association introduced at its winter meeting in Clearwater Beach, Fla. is now available in quantities.

Entitled *The Dream Lawn Is Yours in Hours with Sod,* the short brochure is the first of a series being designed for the use of sod producers in promoting the use of sod. Ordering is done through the association at: Association Building, Ninth and Minnesota, Hastings, Neb. 68901.

Shooting seedlings into the ground from a helicopter may become the future method for planting trees.

The innovative technique, involving a seedling encased in an icicle-like projectile, is being studied by the U.S. Forest Service in Missoula and Portland, Wash. Donn Eddy, a Portland helicopter pilot, developed the process which he believes can reforest hard-to-plant areas, including steep, inaccessible areas. If it is determined the device would be an economical and practical way of planting seedlings, the agency's Missoula Equipment Development Center would perfect the technique.

General soil characteristics, especially soil depth, influence directly the potential rooting depth of planted trees and indirectly the amount of water and nutrients taken up by the trees to support the growth processes, according to Carl A. Budelsky, assistant professor in the Forestry Department at Southern Illinois University at Carbondale. He has completed a study on the relation of soil depth to tree survival and height growth.

He said a composite sample of 122 trees was selected randomly from those receiving shallow cultivation for five years to control herbaceous vegetation. The sample included sycamore, yellow poplar, sweetgum and white ash trees.

He said decreases in height growth may be expected if adequate control is not maintained on the herbaceous vegetation that competes with trees for available soil water and nutrients where there is already a limiting rooting space.

"The past history of surface erosion, especially on land abandoned from agricultural uses, also can reduce effectively the rooting zone," he said. "Thus, careful evaluation of soil conditions present on lands to be planted to hardwood tree species is not only prudent, but is an indispensible prerequisite for satisfactory establishment and growth of trees."

Instead of spending $500,000 on a revamped water treatment plant, Orange Grove, Miss. runs its raw sewage into a lagoon loaded with water hyacinths, according to a report from the Associated Press.

"We have been treating the wastes of about 1,500 persons with these water hyacinths and they are doing a tremendous job," said Clarence Johnson, president of Orange Grove Utility. Using water hyacinths which clog waterways throughout the South to clean polluted water is the idea of Bill Wolverton, a researcher at the National Space Technology Laboratory in St. Louis.

"They are ideal for sucking pollutants out of the water because they grow so fast and have a nice, big root system," he said. But there is a limit to how much each plant can absorb, so every couple of weeks some of the hyacinths are yanked out, dried and processed.

"Since those hyacinths are free of heavy metals, we have a program going with the Mississippi State University agricultural experiment program to turn them into animal feed," he said. "Water hyacinth meal would make a great protein supplement because the plant is about 20 percent protein, as compared to eight percent for corn and 11 percent for wheat."

The National Space Laboratory technology lab has also installed its own hyacinth-filled lagoon to remove the silver, other heavy metals and chemicals from its waste water. "Our tests prove the water coming out of our chemical waste pond is lower in chemicals than the water coming out of our taps," Wolerton said.

His research shows 2.5 acres of hyacinths can remove:

- More than 500 pounds of phenol, a toxic chemical derived from coal tar, every three days.
- About 300 grams of cadmium or nickel, both of which can cause cancer, every day.
- The nitrogen and phosphate wastes of 800 to 1,000 persons each year.

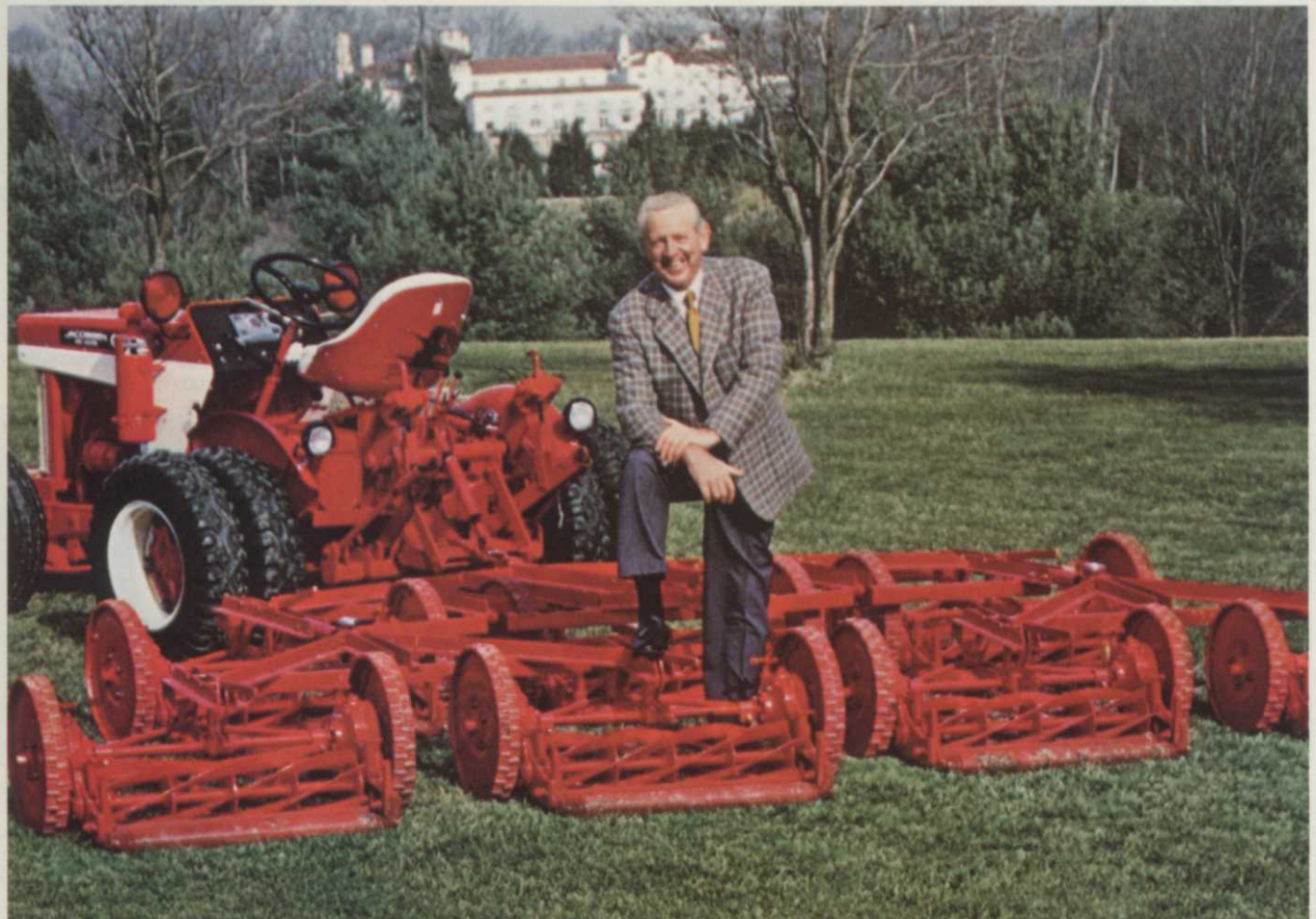
At Orange Grove, about 115,000 gallons of the effluent flows daily into a three-acre lagoon to settle. Then it is slowly filtered through about an acre of water hyacinths. And after about two weeks it is clean enough to be returned to a local stream.

Major emphasis is being given to soil physical improvement, especially for golf greens, according to Dr. Jack Butler of Colorado State University, Fort Collins, Colo.

"At the various turf conferences that I have been to this season, this has been a big topic," Butler said. "As I recall, it was not more than 10 years ago that standard greens mixes and topdressings were something like equal parts of sand, soil and peat. Today sand is just about all that is being talked about and being considered for golf greens."

He said the primary concern is now that of sand quality. Organic matter is beginning to get much needed attention and the effects of various quality organic amendments on the physical quality of the soil is being investigated. He said one golf course builder will soon be using straw for organic matter in the sand for establishment of bentgrass.

"It seems that the extensive work done on golf green medias has given some much needed information," he said, "and now the time to research improvement techniques of large turf area soils is at hand. A question that needs to be answered is how can we significantly improve the heavy soils that handle so poorly on golf course fairways." His comments were reported in the newsletter of the Rocky Mountain Golf Course Superintendents Association.



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Take the Jacobsen Fairway gang mowers. You get a choice of three different wheel styles (steel, semi-pneumatic and pneumatic). There are six-blade standard and 10-blade high-frequency units for cuts as smooth as a carpet.

And we offer 3, 5, 7, 9, 11, or 13-gang combinations. With adjustable cutting heights ranging from ⅜" to 2¾".

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Tuckahoe Turf Farms Inc.,*Tuckahoe, N.J., tried Baron on several fields. Like we've said before, sometimes it's better to hear it from someone else. Here is what Walter Betts had to say...

"Probably the thing I like best about Baron is the way it comes up fast. I can plant Baron late in the season and still harvest sooner."

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"I have compared Baron to Merion and found that Baron requires less fertilizer and was less sensitive to a dry spell just after planting. Let's face it. . .less water and less fertilizer means more money for me."

"I look for a grass that is as disease-resistant as I can find. I couldn't find a patch of rust or dollar spot. Looks like it resists other diseases too."

"Some grasses just don't take to the shock of mowing. Baron has what I call 'mowability qualities.' It withstands short mowing and the dark green color doesn't fade."

"What we need is a good tight root system that holds together from the field to the job. Baron lets us be a little less fussy when we're loading. It's tough."

"And Baron is extremely compatible in mixtures. As I said before, Baron will be used in all Tuckahoe Turf Farms mixtures this year."

There's not much more we can add to Walt's comments except that Lofts Pedigreed Seed Company or any authorized distributor is nearby wherever you grow sod.

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